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Of Watches, Fathers, Sons (and Daughters)



Churchill père



Churchill fils

For centuries, as you all know, watches have served to enrich the bond between fathers and sons. Patek Philippe, for one, mines this deep emotional vein in its current advertising campaign called "Generations." The ads portray a father and a young son enjoying time together. The tag line states: "You never really own a Patek Philippe. You merely look after it for the next generation."

But what happens when the father-son watch bond ruptures? That is the subject of a story in this issue that I guarantee you will not see in any other magazine in the world. The story is about a little-known episode in the life of Winston Churchill. The incident has fascinated me for more than a decade, and I am delighted to finally see it in print.

In a lovely irony, I learned about it from my daughter. She spent her junior year in college studying British literature in England. On one of my trips to see her, we visited Blenheim Castle, the hereditary home of the Churchill family, where Winston was born. As she and I wandered about the place, filled with Churchilliana, she saw something and called over to me, "Dad, you should take a look at this." Framed on the wall was a letter from Winston Churchill to his father, Lord Randolph, on what was clearly the sensitive subject of a Dent watch. My curiosity was piqued to the max.

Back home, in my free time, I began trying to get the details of this episode. As you might imagine, in the long, epic life of the man whom Time magazine in 1950 anointed as "The Man of the Half-Century," an episode in his late teens involving a watch ranks pretty low in importance. Nevertheless, over the years, primarily through tracking the correspondence of the four Churchill family members, I pieced together much of the story.

But not all. One frustrating, elusive detail was the precise identity of a certain "Mr. Dent," who plays a crucial cameo role in the tale. It turns out that there were two Dent shops in London at that time, both run by

descendants of Edward John Dent, both selling Dent watches.

The breakthrough came with the arrival of the newest member of our editorial team, associate editor Jay Deshpande, who joined WatchTime in September. We decided to upgrade the Churchill story from a personal, increasingly neglected hobby to an "official" WatchTime feature. We assigned the story to Deshpande and I turned over the dusty "Churchill's Watch" file to him. His main mission: Identify Mr. Dent.

And, indeed, he did. He spent hours in the New York Public Library, scouring biographies of both Winston and Randolph

THE CHURCHILL STORY IS A TESTAMENT TO THE EMOTIONAL POWER THAT WATCHES CAN PACK.

Churchill, and he got his man. Deshpande confirmed that Lord Randolph was a client of Edward John Dent, whose shop was on Cockspur Street in London. Deshpande also unearthed, with the help of Dent London, another intriguing tidbit. (Dent London is a small firm that repairs old Dent watches and markets new ones under the Dent name.) Years after the events chronicled in the story, Winston Churchill purchased for himself a Dent half-hunter watch, not unlike the one his father gave him – and, alas, took back.

Deshpande's account of how a watch plunged the Churchills into a tumultuous family drama begins on page 134. It's a testament to the emotional power that these ticking trinkets can pack.

Joe Thompson
Editor-in-Chief



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GET WATCHTIME WEEKLY



In this issue of **WatchTime Weekly**:

Ulysse Nardin's Carnival of Venice minute repeater; Gucci's latest timepiece inspired by the Grammy Awards; Hublot's trio of new Big Bang Ferrari watches; and a double-faced Grande Reverso from Jaeger-LeCoultre. Also, you can check out our slideshow of on-site photos from the SIHH watch fair and watch our exclusive video interview with Lamborghini CEO Stephen Winkelmann about his brand's partnership with Blancpain.

Enjoy!
Mark Bernardo
Digital Media Editor,
WatchTime

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Photo Slideshow
Inside SIHH 2013



Unlike its larger counterpart in Basel, the SIHH watch fair in Geneva is mostly closed to the public. To give *WatchTime* fans a glimpse of what goes on in those hallowed halls of horology, we've compiled a slideshow of photos, taken at the show by our own Mike Disher.

[Click here to read more...](#)

Watches in Pop Culture
Gucci's New Grammy Timepiece



The 55th Annual Grammy Awards will take place this weekend in Los Angeles, and for the third year in a row in its partnership with the Recording Academy, Gucci Timepieces & Jewelry will release a new, Grammy-branded wristwatch to coincide with the music industry's biggest night.

[Click here to read more...](#)

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We take a look at five extravagantly engineered watches from this year's SIHH fair in Geneva. See new models from A. Lange & Söhne, Cartier, Jaeger-LeCoultre, Roger Dubuis and Greubel Forsey.

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A survey of 25 of the most important watches Omega has ever made, from the world's first minute repeater wristwatch (1892) to the equally innovative Planet Ocean Liquid Metal of two years ago.

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An elegant, upper-crust mansion in Le Locle is home to Vulcain and its boisterous Cricket watch.

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It seems quiet; maybe even dull. But this small town in the Jura Mountains is a hotbed of horology, with a watchmaking history that goes back more than three centuries.



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Mainsprings perform herculean tasks. How do these delicate devices, which are no thicker than one-tenth of a millimeter, do their job?

134 **WINSTON'S LOST WATCH**
When Winston Churchill was a cadet at Sandhurst, he accidentally dropped his watch in a stream. What happened then reveals much about the young man who would become the most famous Briton of his time.

142 **SPRING TIME**
Technotime, in the remote town of Les Brenets in the Swiss Jura Mountains, is one of the world's few hairspring makers. With the supply of hairsprings in peril, WatchTime decided to pay the company a visit.

148 **THE INSIDE STORY**
Growing fascination with the inner workings of mechanical watches has sparked a boom in skeleton looks. See 16 recently introduced skeleton watches in this photo portfolio.

FOUNDED IN 1755, ON AN ISLAND
IN LAKE GENEVA. AND STILL THERE.



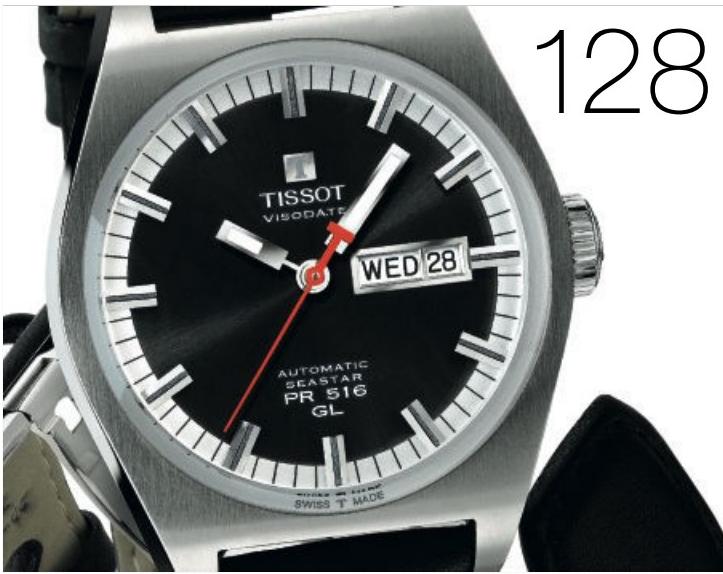
In 1839, Vacheron Constantin created the famous pantograph, a mechanical device allowing for principal watchmaking components to be reproduced with total precision. Elevating the quality of its timepieces even further, this invention, which also revolutionized Swiss watchmaking, would propel the brand into the future.

Faithful to the history upon which its reputation is built, Vacheron Constantin endeavours to maintain, repair and restore all watches it has produced since its founding: a sign of excellence and confidence, which continues to elevate the brand's name and stature.

Patrimony Traditionnelle 14-day Tourbillon Calibre 2260
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Tourbillon, Ø 42 mm
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inside

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a guided tour behind the scenes of
BASELWORLD and SIHH



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DIGITAL ENHANCEMENTS

WatchTime, March-April 2013

WatchTime contains bonus content that readers can access via mobile devices. QR codes are on the pages listed below.



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BOVET

Learn more about Bovet's history and products.



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OMEGA AQUA TERRA

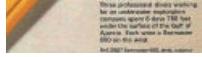
Read our 2011 test of the non-GMT version of the Aqua Terra, also with a co-axial escapement.



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OMEGA MILESTONES

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SKELETON WATCHES

Download hi-res images of several of the skeleton timepieces shown here.



Web

Takes you to a website or to bonus content on www.watchtime.com



Images

Shows you additional photos related to the story



Video

Lets you view a video related to the story



Sound

Lets you hear an audio recording related to the story



Interview

Lets you hear an excerpt from an interview conducted for the story

How to use a QR Code

A QR code ("quick response code") works like a barcode, and can take you to a designated website when scanned on your mobile device (smartphone/tablet). To scan a QR code, first download a QR reader app. There are several free apps available, like "QR Droid" for Android devices or "AT&T Code Scanner" for Apple iOS devices. After you download it, use the app to scan the QR code with your device's camera to view the WatchTime online bonus content.





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CHOPARD REVAMPS THE L.U.C LUNAR ONE

Chopard's L.U.C Lunar One Grande Complication, a perpetual calendar with an unconventional, orbital moon-phase display, has been released in a new version with a curvier case and very easy-to-read dial.



INSIDE SIHH: A BEHIND-THE-SCENES SLIDESHOW
Unlike its counterpart in Basel, the Salon International de la Haute Horlogerie (SIHH) watch fair in Geneva is closed to the public. To give our website visitors a glimpse of what goes on in those hallowed halls of horology, we've compiled a slideshow of photos taken at the fair.



FLYING THROUGH TURBULENCE: A HISTORY OF BREITLING

In this story from our German sister magazine Chronos, previously unpublished in English, Gisbert Brunner explores Breitling's history, its ties to the aviation industry, and how it achieved the goal of making its own movements in its 125th-anniversary year.



GIRARD-PERREGAUX'S NEW HAWK COLLECTION TAKES FLIGHT

Girard-Perregaux launched its new sports-watch line, called Hawk, at a "watch-making on the beach" event during Miami's Art Basel festivities. WatchTime sat with Michele Sofisti, CEO of the brand, who gave us a close look at the new pieces and answered questions about the line.



BALL & BMW TEAM UP FOR NEW WATCH COLLECTION

Ball Watch Co., whose history is rooted in the early days of train travel, has taken its watchmaking talents from the rails to the roads, collaborating with German luxury automaker BMW to introduce a new line of watches called Ball for BMW.

HUBLOT ADDS THREE MORE TO ITS FERRARI FLEET

Last year, Hublot released the first Big Bang Ferrari watches, products of a collaboration with the famed Italian automaker. During the Geneva watch fairs, the brand introduced three new models to the collection, including the Red Magic Carbon, a watch with a carbon-fiber case and red-tinted sapphire crystal.





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THE MAGAZINE OF FINE WATCHES

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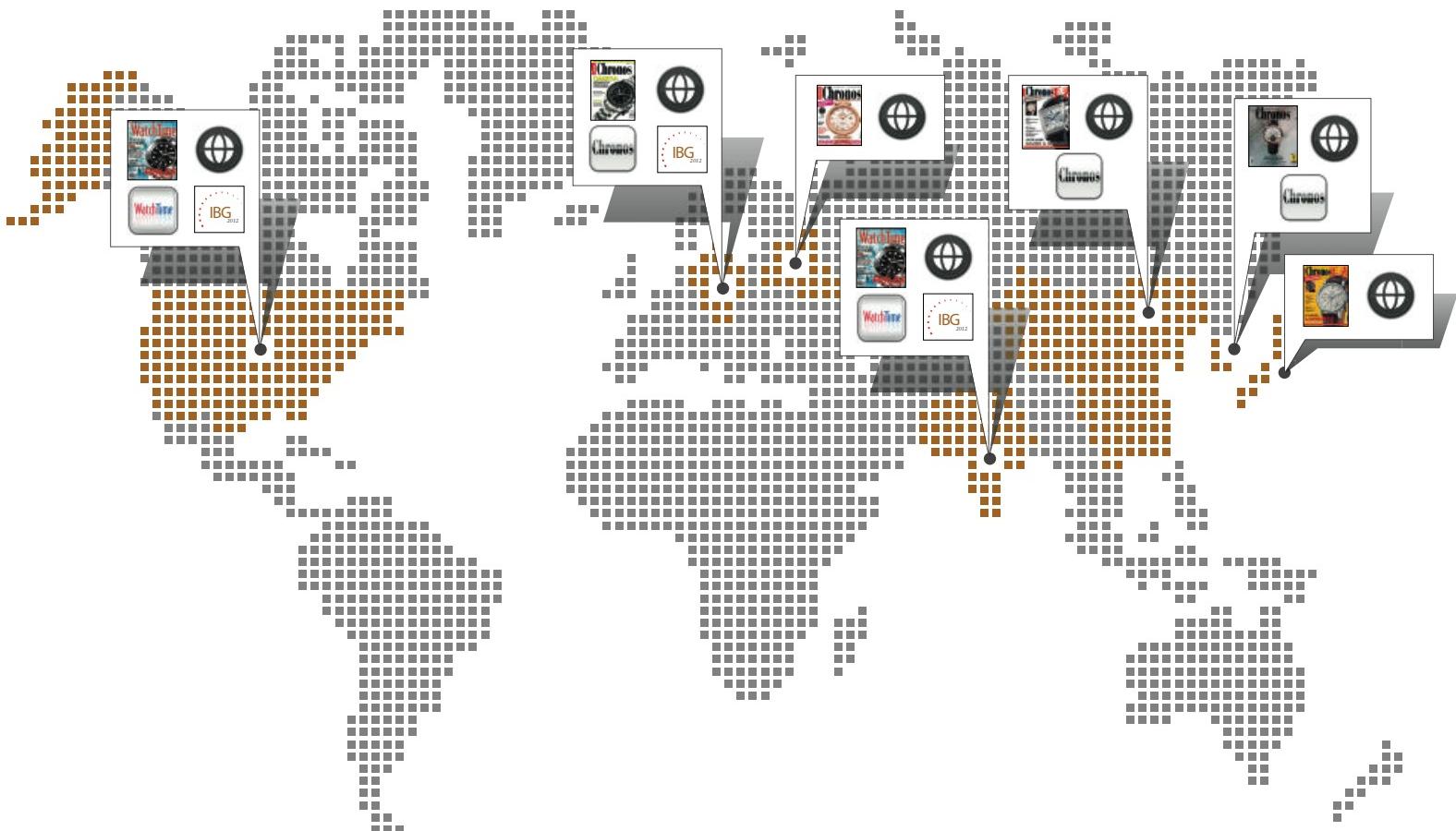
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"INSTEAD OF FEAR-MONGERING [ABOUT SUPER-FAKES], THE SWISS SHOULD MAKE THEIR WATCHES MORE AFFORDABLE TO THE UNWASHED MASSES."

'SUPERFAKE' FEEDBACK

I've just finished reading your article on the counterfeit watch industry ["Buyer Beware," February 2013]. As a man of average income (I'm a car mechanic), I have put together a very respectable watch collection over the years, but couldn't help noticing the sharp rise in cost to acquire new pieces in the last few years. Couple that with the worldwide crisis and you can see why some average Joes will think twice before shelling out their hard-earned greenbacks.

I'll give you an example: last fall for the first time I bought a "superfake," as you called them. This particular watch was a copy of a very popular make, a simple three-handed watch in a stainless-steel case with a leather strap. Now, the genuine article is retailing north of 25 G's, and that's for a watch with a caliber based on the venerable and cheap-to-manufacture Unitas 6497 pocketwatch movement, which is made all over the world, including China. I paid \$500 for the faux item, which is so well done that even my most knowledgeable watch dealer friend had a hard time telling the difference.

Where I'm going with this story is: if it's possible for the Chinese to make the same watch for 40 times less than the Swiss, then how much mark-up and profit is made by the Swiss? It's funny to me that a few years back the alarm bells were sounding the world over about how the Swiss watch industry miraculously rebounded thanks to the amazing upswing in watch sales in mainland China – the very culprit who's responsible for the majority of fake watches manufactured every year!

As for the list of the "10 evils of counterfeit watches," I was not aware of the 750,000 U.S. workers employed by the Swiss; or are we talking fake Timexes now? As for your children ingesting your fake Daytona containing lead paint, I'd say the chances are marginal at best.

Don't get me wrong. I'm not encouraging people to buy fakes. But instead of fear-mongering, the Swiss should make an effort to make their watches more affordable to us, the unwashed masses.

Mike Lenard
Toronto, Canada

I want to comment on your "Buyer Beware" story. I'm glad when stories like this bring to light how dirty the counterfeit watch business is. I'm also glad you wrote about the "innocence" that customers try to convince themselves of, if they buy a knock-off. If you are buying counterfeit watches, you are feeding the fire with each and every dollar spent. It's just wrong! As a retail watch consultant, I do find a tragic irony when I consult with some people on a watch purchase. These are educated, professional consumers who will tell me how "changing dynamics" in their profession negatively affect their business. Yet, too many of these very same people would buy their next watch from the back of an ice cream truck if they saved \$500!

Joseph Nemeth
Via email

IS COSC SO IMPORTANT?

When I saw the latest COSC statistics in the December edition ["COSC 2011: Rolex and Omega Dominate"], I couldn't help but notice that many, if not most, of the haute horlogerie brands don't bother submitting their watches for certification. I realize that each brand has its own quality assurance standards, but the list left me asking myself: is COSC (or any other independent) certification as important as it is made out to be? To some, I'm sure the answer is a resounding yes. But to others, including myself, rate results are a factor, but not the driving force behind a watch purchase.

David Elliott
South Windsor, CT

KEEP IT SIMPLE

I am an avid lover of timepieces. I enjoyed reading your February 2013 issue, especially the "Buyer Beware" article [on counterfeits] and the "Bigger Still" article [on Rolex's new factory in Bienna]. I understand that the complications on a timepiece are important and that with more complications the difficulty of manufacturing is increased, and so is the price.

Although my most valuable watch is a Rolex Daytona, I am not a big fan of watches that have too many complications. I want my watches to be simple. Most of what is in my col-



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Inside Arnold Schwarzenegger's watch drawer



The twisted sunburst pattern on the movement in Chopard's Classic Manufacture watch

WatchTime welcomes correspondence from readers. Send comments to editor-in-chief Joe Thompson at 274 Madison Avenue, Suite 804, New York, NY 10016 or via e-mail to jthompson@watchtime.com. Please include your full name, city and state, and country (if outside the United States). Letters may be edited for length or clarity.

"I ALMOST PUKED OVER THE PICTURE OF AT LEAST A MILLION DOLLARS' WORTH OF PRECIOUS WATCHES TOSSED IN ARNOLD SCHWARZENEGGER'S DRAWER."

lection are simple timepieces such as an IWC Mark XVII and a Panerai Luminor Marina Logo. I buy a timepiece because it is accurate, easy to read, reliable and, of course, elegant. My daily wear is a Ball Engineer Master II or my Vostok N1 Rocket. Both of these are awesome for their simplicity. Time and date, that's all. I do prefer some with day included, but anything more makes it too busy and hard to read the time. I do have three or four with chronographs, like my Daytona and my Hamilton Jazz Master Auto Chrono. But even though I'm a flight engineer, how often do I really use the chronograph? Most of the time a good bezel on the watch will do to record elapsed time. So I wish you would do an article about simplicity in watches.

Mark Apollo M. Santamaria
Honolulu, Hawaii

We've been tracking the recent, welcome return to simplicity in watches. Mark Bernardo's "Classical Revival" article in the October 2011 issue analyzed the shift and showed 23 new watches that had just two or three hands. Evidence at the January SIHH show in Geneva indicates that the trend is still strong. We'll stay on the subject. JT

ARNOLD'S 'DISASTROUS' DRAWER

I was busy in the past couple of months and could not find time to read the December 2012 issue, hence the late reply. I barely finished reading it. I wanted to sit down and express the horror and disgust that I felt after reading the story about "Da Termineita" and his "drawer full of watches" ["The Terminator's Timers"]. I almost puked my breakfast over the large picture showing at least a million dollars' worth of precious and unique watches tossed in a drawer, the same way I toss my son's poopy diaper in the trashcan.

I can remember how much effort, sacrifice, and financial discipline it cost me to buy my first (and so far only) high-end watch. Right now I am saving for another one and I hope to buy it this year. Seeing the disregard that Mr. Schwarzenegger shows for the art and pleasure of owning expensive and exquisite watches made my eyes bleed. I hope I did not get permanent traumatic neural damage from seeing this "watch disaster." Needless to say, I lost all my respect for this guy.

There is an eastern European saying, that "The biggest pigs always eat the most delicious apples."

But hey, who am I to criticize the Terminator for how he "feels" and stores his watches? [Editor's note: The reference is to Schwarzenegger's comment in the story, "I know all these watches by their feel. ... I can go into the drawer at midnight and find the watch I am looking for by feel."]

Dan Douchkin
Indianapolis, IN

'REFRESHING FINISHING'

Just a comment regarding the December 2012 test of the Chopard Classic Manufacture ["First Responder"]. What your tester thought of as a drawback for lack of finishing on the movement, I found refreshing. It kind of reminds me of Panerai's *manufacture* movements, with their (probably deceptively) simple brushed finish with polished chamfers on the plates and jewel holes. You know what was also cool was the frosted gold finish Nomos had a while back, reminiscent of the old IWC pocketwatches.

But I guess that's one of the reasons the world of watches is so varied. Someone else is looking at the Breguet ad on page 15 with its ornate finish and saying, "I've got to have that!" And God bless him/her for being able to afford to go out and buy it.

I'm looking forward to the next issue. I've cut down on my time devoted to watches, buying WatchTime just here and there for the last few years, but it seems my interest has returned. (The interview with the vice president of Breitling, Jean-Paul Girardin, didn't hurt!)

Scott Lalonde
Via email

Just to be clear, our tester, Jens Koch, did not criticize the finishing on the Chopard watch. In fact, he praised the twisted sunburst pattern on the bridges and rotor, stating, "Visually the new movement has plenty to offer." Perhaps you interpreted the caption with the photo of the movement ("The 01.04-C has little decoration") as a criticism. It wasn't intended to be. JT

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DESIGNED TO BE NOTICED

Why Harry Winston?

The Swatch Group's acquisition of the famous diamond jewelry retailer makes Swatch a player in the lucrative haute joaillerie market.

The Jan. 14 announcement that the Swatch Group had agreed to buy Harry Winston Inc. for \$1 billion sparked fevered discussion in watch circles. It was a hot topic of conversation at the SIHH show in Geneva the following week. Oddly, a lot of the instant analysis among the watch gang was fairly negative. Not a good fit, some groused: Harry Winston's high-class image would be hurt by the Swatch Group's "industrial" mentality. Swatch paid too much, others argued. It was a defensive move, some said: Swatch bought it because it didn't want rival luxury watch groups like LVMH or PPR to get hold of it.

Financial analysts, on the other hand, were far more positive. Not burdened by watch blinders, they saw immediately that the acquisition is a jewelry play; watches have little to do with it. Harry Winston, one of the world's best-known diamond jewelry retailers, is overwhelmingly identified in consumers' minds with expensive jewelry. Harry Winston watches, which the firm launched in 1989, are a sideline. The story here is that, with this acquisition, Nayla and Nick Hayek, the Swatch Group's chairwoman and CEO, respectively, have dramatically expanded the group's product portfolio. They have turned the world's largest watch company into a player in the high-profit *haute joaillerie* market overnight. "It's a match made in heaven," Jon Cox, head of Swiss research with Kepler Capital Markets in Geneva, told Reuters.

Once the deal is approved by regulators, the Swatch Group will acquire Harry Winston Inc., based in New York, the diamond jewelry and watch business founded in 1932 by the legendary diamond merchant Harry Winston. That business had sales of \$412 million in the fiscal year ended Jan. 31, 2012.

Since 2004, Harry Winston Inc. has been owned by a diamond mining company. That's when Aber Diamond Corp., of Toronto, co-owner of Canada's Diavik diamond mine, purchased 51 percent of Harry Winston from the Winston family for \$85 million. In 2006, Aber acquired the rest of the shares for \$157 million. The next year, Aber changed the company name to Harry Winston Diamond Corp. and went public. However, the mix of diamond mining with luxury diamond jewelry retailing turned out to be an awkward fit. Despite strong sales in 2010 and 2011 (the company had consolidated sales of \$702

*Left: Harry Winston Ocean Sport Limited Edition watch
Below: Talk To Me, Harry Winston watch*



million in the fiscal year ended in January 2012), the owners of HWDC made it clear last year that their intention was to sell the retail watch and jewelry division and devote themselves full-time to diamond mining.

Hence, the Swatch Group deal. Swatch will pay \$750 million for Harry Winston Diamond Corp.'s diamond jewelry and timepiece division, plus up to \$250 million to eliminate debt. At that point, Swatch will own the Harry Winston brand and

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ONE LITTLE-NOTED DETAIL OF THE DEAL: A POSSIBLE DIAMOND-POLISHING JOINT VENTURE FOR SWATCH.

HWDC will change its name to Dominion Diamond Corp. It will use the \$750 million it nets from the sale for further investments in diamond mining. Swiss reports said that Swatch, which had 1.13 billion Swiss francs in cash on its balance sheet as of June 2012, will pay cash.

For that sum, the Swatch Group gets a new, prized foothold in the high-end jewelry business. The vast majority of Swatch's watch and jewelry sales (\$F7.30 billion in 2012 – see item on page 46) are from watches. (Swatch does not break out sales by category.) With Harry Winston, Swatch will have a jewelry maison to compete with the likes of Richemont's Cartier and Van Cleef & Arpels. Harry Winston Inc., its 535 employees, 20 salons, its watch factory in Geneva (Harry Winston SA) and its wholesale watch division, with 200 points of sale around the world, will become part of the Swatch Group.

After slumping in the recession year of 2009 (its fiscal 2010) to \$225 million, Harry Winston sales have roared back (see chart), up 83 percent over the past two years. Sales for 2012 (fiscal 2013) were up five percent for the nine months ended in October.

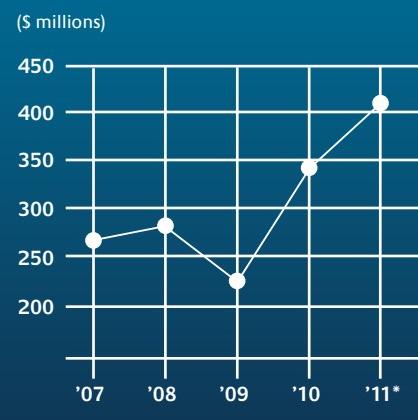
Jewelry accounts for about 85 percent of its \$400-million-plus sales. (That's our estimate; like Swatch, HWI does not break out sales by product segment.) One indicator of the firm's position at the top of the jewelry price pyramid is that \$67.5 million of its fiscal 2012 sales were what the company calls "high-value transactions," i.e., "transactions exceeding \$5 million." Harry Winston foresees strong growth in its jewelry business. In a presentation to investors in December, it outlined a new strategy for bridal jewelry and new initiatives to attract "a new audience: 25-to-45-year-old women."

Of course, Harry Winston also makes watches at the Harry Winston Fine Time-

*Harry Winston's
Histoire
Tourbillon 2
watch sells for
\$665,000.*

pieces division in Geneva and now becomes the Swatch Group's 20th watch brand. Harry Winston says it produced 6,000 watches in 2011 and expected to produce 7,000 last year. The opening price is \$12,000 for the Ocean Sport collection and \$14,000 for its Midnight series. Diamond jewelry pieces can run up to six figures. So can some exceptional men's mechanical pieces. The company's limited-edition (20 pieces) Histoire Tourbillon 2 watch sells for \$665,000. The firm has carved out an important niche for itself with watch collectors with its celebrated Opus collection of limited-edition, avant-garde, high-mechanical watches created by a different prominent watchmaker each year. Opus 12, created by Emmanuel Bouchet, is priced at \$258,700; the company will produce 120 of them.

HARRY GETS HOT Sales of Harry Winston Inc.



Source: Harry Winston Diamond Corp.



Nick Hayek Jr. considers the billion Swiss francs he paid for Harry Winston as money well spent. He told Reuters that the firm has the potential for SF1 billion-plus in sales and SF250 million in net profit in five years.

And that doesn't factor in one of the little noticed but extremely intriguing aspects of the deal. It turns out that the Swatch Group is, as HWDC Chairman Robert Gannicott said in his announcement of the sale, "one of the world's largest buyers of polished diamonds." Gannicott said that the new Dominion Diamond Corp. "will retain an ongoing relationship with the Swatch Group in sourcing polished diamonds for them." Then there was this tidbit, which suggestss that the Swatch Group is quite serious, indeed, about its foray into jewelry: "The two companies will also explore the opportunities for a joint diamond polishing venture, bringing together the manufacturing and diamond expertise of the two companies."

- JOE THOMPSON



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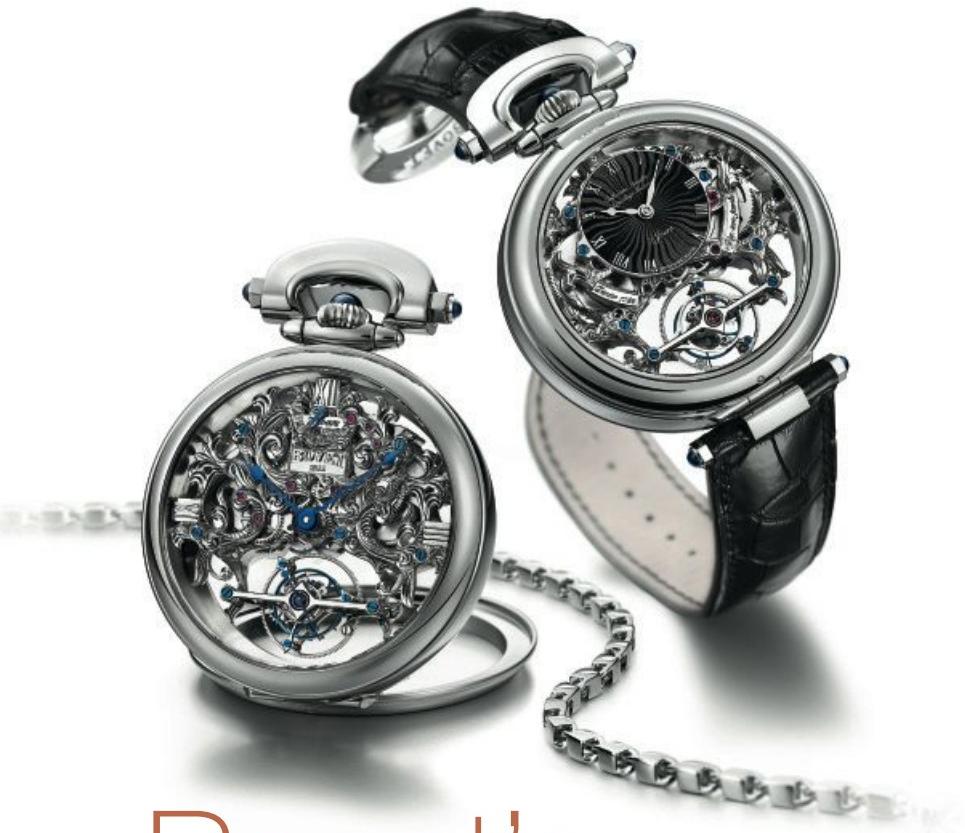
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Pascal Raffy and the new Fleurier Amadeo 7-Day Skeleton Tourbillon



Bovet's New Horizon

The owner of one of Switzerland's smallest vertically integrated manufactures talks about his brand's history, his strategy, and what he wants next.

"I always had a dream to go back to Mainland China," Pascal Raffy says, with characteristic excitement. Meeting with WatchTime on a recent trip to New York, Raffy was charged with enthusiasm and confidence, and rightly so. In the 12 years since he purchased Bovet Fleurier SA, he's resurrected the long-dormant brand and built it into what may be the smallest vertically integrated *manufacture* in Switzerland. The company makes watches ranging from \$18,000 into six figures. Although Bovet produces just 2,000 timepieces a year, Raffy has purchased his suppliers for movement-making, including tourbillon movements;

modules; precision polishing; and even hairsprings – not to mention a stunning 14th-century castle in Fleurier, the ancestral home of the Bovet family.

Still, China remains the goal. That's largely due to the brand's heritage: Bovet was a major player in the 19th-century China trade. The brand's founder, Édouard Bovet, left Switzerland to work in watch repair in Canton, China, where he took note of how much the Chinese liked fine European watches. He and his brothers started the company in 1822, and its watches almost immediately gained wide appeal. The watches popular in the coun-

try at the time, now commonly known as "Chinese-market watches," featured pearl inlays and miniature enamel paintings on the case. Bovet's business boomed throughout the 19th century, although this legacy had been largely forgotten until Raffy rebuilt the brand.

Now, Raffy has found a new way of returning to the company's roots. In 2012, he sold 20 percent of Bovet to DKSH Ltd. (Diethelm Keller Siber Hegner), a Swiss trading company that specializes in market expansion in Asia. Raffy notes that Bovet and DKSH have similar histories: the roots of DKSH go back to the mid-19th century, when three Swiss entrepreneurs voyaged to Asia and established businesses in Thailand, Indonesia, and the Philippines.

Today, DKSH serves as the Asian agent and distributor for European and North American companies in several industries. Its other watch clients include Breitling, Corum, Ulysse Nardin, and Harry Winston. Raffy isn't concerned about ceding some control of Bovet. "All



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The Bovet workshop at the Château de Môtiers



The Récital 9 Tourbillon Miss Alexandra

through the talks, I understood that I had people in front of me who share my values," he says.

Bovet's past sales in Asia have been through multi-brand retailers. But with DKSH, Bovet intends to open six to eight new Bovet-only boutiques over the next 36 months, along with an expanded retail presence in other parts of the globe. The brand currently has boutiques in Moscow and Baku, Azerbaijan, with a third opening this spring in Berlin. Bovet is set to have at least six boutiques by the end of 2013.

Raffy is cautious about expansion, even though demand for luxury watches has increased in Asia over the last few years. "The number of points of sale is not really the essence for me," he says. "For an independent house, it's not so crucial that I

go gain an additional 10-percent margin." Independence and creative freedom are what he values most, and even though Bovet's manufacturing facilities now have the capacity to assemble 6,000 timepieces per year, he isn't in any rush to max out production.

Instead, he's focusing on what the brand does best: finely decorated and innovative design in small-batch production. In 2013 Bovet is introducing the Fleurier Amadeo 7-Day Skeleton Tourbillon, the brand's first skeletonized tourbillon. It features a *manufacture* movement with a three-quarters plate and cut-outs that match its elaborate *fleurisserie* engravings. It has adjustable reverse hand-fitting, so that it can be worn with either the front or the caseback facing up. The seconds hand is on the upper pivot of the tourbillon at 6 o'clock.

Another new item is the Miss Alexandra Moon Phase. Also a seven-day tourbillon, this piece is the first oval watch in the Dimier collection (which produces one model per year, each under the name "Récital"). The unusual moonphase display is set at 12 o'clock, with an accurate representation of the moon's face as we see it from Earth. Rather than rotating through an aperture, here the moon stays fixed, and two blue PVD-treated nickel silver pallets rotate over the moon to reveal and obscure it.

New, too, is the OttantaTre watch, developed in association with the Italian automotive design company Pininfarina. It is the fourth watch to result from this partnership. The OttantaTre has a jumping hour displayed in cut-outs of Arabic numerals which pass over a luminous

The Château de Môtiers



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Raffy bought this 1835 Bovet watch at auction last fall.



backing, and a retrograde minutes display in the top half of the dial, leaving plenty of room for the automotive-themed tourbillon at 6 o'clock.

Bovet's return to China is the latest phase in a growth strategy that began in 2001. After his purchase of the brand that year, Raffy began to invest in his suppliers. In 2004 he acquired a 25-percent stake in Aubert Complications, a module maker in the Vallée de Joux. Aubert was producing a particular perpetual calendar module for the Vaucher movements Bovet was then using. By 2006, Raffy was ready to make sweeping additions to his fiefdom. He bought STT (Swiss Tim-

ing Technology), whose several factories gave him the capacity to make movements, including tourbillon movements. STT also had a hairsprings factory, which has come to be a crucial feather in the Bovet cap. And with Aigat SA and Valor & Lopez, Raffy was able to acquire specialists in embossing and dial-making, respectively. By the end of 2006, Raffy had purchased the Château de Môtiers, a castle overlooking the town of Fleurier. The company's manufacturing facilities, which go by the name of Dimier 1738, are now divided between Plan-les-Ouates, the Château de Môtiers, and Tramelan.



The OttantaTre

This vertical integration would seem a prudent strategy today, in the wake of the Swatch Group's 2010 decision to cut down its sale of movements and components, including hairsprings, to other watch companies. But it's still more prudent because Raffy made these moves before the Swiss industry began to grapple with a drawdown in component supplies. Now, while the rest of the industry is fretting about where their hairsprings will be coming from a year or two down the road, Raffy doesn't need to fear. Having invested millions in his Tramelan *manufacture*, he can continue making watches as he sees fit. Dimier 1738 has become a component supplier for several brands, and others have come calling for parts. However, Raffy says he doesn't have the capacity to become a major component supplier. Raffy employs 76 workers in the Tramelan facility, and he doesn't want to dilute the Bovet brand by increasing that number. "It's not my way of life [to grow the company just for profit]," he says. Currently, Raffy says, Bovet maintains growth of about eight to 10 percent per year, and that's where he wants it to stay.

Another way Raffy is guarding the brand is by preserving its heritage. Knowing that Bovet produced roughly 6,000 pocketwatches over the course of the 19th century, Raffy is eager to seek out and purchase as many of these vintage Chinese-market timepieces as possible. Last fall at a Christie's auction in Geneva, Raffy acquired an 1835 Bovet pocketwatch with an enamel painting of a mandarin duck on the back for 363,000 Swiss francs. While there's a pleasure in adding these to his collection of classic Bovets at the Château de Môtiers, Raffy is equally excited by the growing demand beyond his own walls: his competitors in the auction included private collectors and museums from all over the world.

- JAY DESHPANDE



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Hall 1 of the exhibition center will now be 420 meters long, with 141,000 square meters of exhibit space.

Brave New Baselworld

Watch lovers have had to wait extra-long for this year's installment of the Baselworld watch show — what many consider the most important horological event of the year. That's because since last year's show, the exhibition complex has been entirely renovated. The extensive remodeling required more than a year to complete, which is why the 2012 show was in early March, whereas this year's show doesn't begin until April 25.

Since Baselworld 2012 closed its doors, construction crews have been working continually to build the new complex. Under the guidance of the Swiss architecture firm of Herzog & De Meuron, the old halls have been demolished and Hall 1, the main watch hall, has been expanded into a 420-meter-long building with three floors. In total, Hall 1 will have 141,000 square meters of exhibition space. And participants are being called upon to take advantage of this expansion. More brands exhibiting in Hall 1 will have stands that are two or three

stories tall. These stands, especially made for Baselworld, will involve new and innovative architecture and design.

The redesign of the Baselworld complex is intended to bring together the key elements of the show. The new design allows for top global brands in both watches and jewelry to exhibit alongside one another in Hall 1. The show's organizers claim that the new layout will offer "greater comfort and convenience for visitors." A total of 430 million Swiss francs (around \$466 million) went into these renovations.

Baselworld is the world's largest watch show. In 2012, total visitors numbered 104,300. With the expansion, Baselworld is all the more prepared to accommodate record numbers this year.

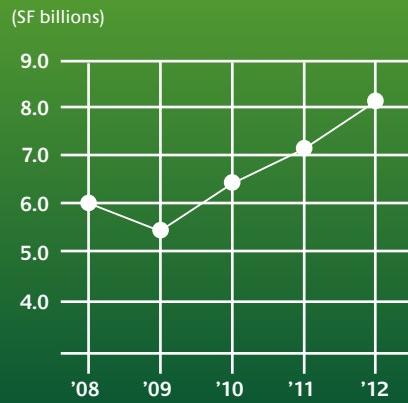
The 2013 show runs from April 25 to May 2, and is open daily from 9 a.m. to 6 p.m. A one-day pass costs SF60 (around \$65) and a full eight-day pass costs SF150 (around \$160). For more information, visit baselworld.com.

-J.D.

Swatch Group Sales Up By a Billion

The Swatch Group had a banner year in 2012. Gross sales rose 14 percent to 8.14 billion Swiss francs (approximately \$8.88 billion), a new record for the company. The watch and jewelry division of the Swatch Group ended the year with total gross sales of SF7.30 billion (\$7.95 billion), up 15.6 percent from 2011. The company said

SWATCH GROUP SURGE
Gross sales



Source: The Swatch Group

that growth for "almost all" of Swatch's 19 brands was in the double digits. Swatch does not break out its financial results by brand.

This is the third year in a row of record-breaking gross sales for the Swatch Group. It passed the SF6-billion milestone in 2010 and the SF7-billion milestone in 2011.

The Swatch Group traditionally publishes its gross sales data at the start of the new year, before releasing its net sales and profit numbers. Those figures were not available as of WatchTime's deadline.

-J.D.

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Seiko Patriarch Dies at 92



Reijiro Hattori

Reijiro Hattori, honorary chairman of Seiko Holdings Corp. and the sole surviving grandson of Seiko founder Kintaro Hattori, died on Jan. 22 at the age of 92. The cause was heart failure, according to the company, which announced his death.

Hattori spent his entire career in the firm his grandfather started in Tokyo in 1881. He remained active in the business until 2009.

Hattori witnessed the remarkable rise of Seiko, which started as a watch pip-

squeak and grew into a world-watch superpower. He was born in 1921, the second son of Genzo Hattori, Kintaro's eldest son. Reijiro's father was president of K. Hattori & Co., as the firm was known then, when Reijiro joined the firm in September 1942. Reijiro became a company director in 1957 and began moving up the executive ladder. He served as vice president of K. Hattori & Co. during the 1970s and early 1980s, during the quartz watch revolution, when Seiko – which introduced the first quartz watch in 1969 – soared to international prominence. In 1983, Reijiro succeeded his brother Kentaro as president of the newly renamed Hattori Seiko Co., Ltd., known today as Seiko Holdings Corp. His brother took the position of chairman.

In 1987, the sudden deaths of both his brother and his cousin, Ichiro Hattori, thrust Reijiro unexpectedly into the role of family patriarch. He was named chairman of all three pillars of the substantial Hattori business empire: Hattori Seiko; the fast-growing Seiko Epson Corp. (which had been headed by Ichiro Hattori, son of Shoji Hattori, the founder's second son); and Wako, the upscale department store located on what is said to be the most expensive piece of real estate in Tokyo, the corner of Harumi-dori and

Ginza-dori Avenues in the heart of the Ginza.

In 2001, he stepped down as chairman of the renamed Seiko Corp. and Seiko Epson Corp., taking the position of honorary chairman of both firms; he remained active in Wako.

Hattori was prominent in Japanese business and social circles. His wife, Etsuko, was a member of the Mikimoto pearl family. Hattori served on boards of numerous civic and business associations. But even as honorary chairman, Hattori held unusual sway within the board of directors of Seiko Holdings. That came to light dramatically in April 2010, when the CEO of Seiko Watch Co., Shinji Hattori, Reijiro's nephew, with the support of the majority of the board, staged a highly public boardroom coup to eliminate his uncle's influence. The board dismissed Seiko Holdings CEO Koichi Murano, a Reijiro ally, and named Shinji to replace him. (See "A 'Palace Coup' at Seiko" in the August 2010 issue of WatchTime.) Shinji proceeded to fire more of his uncle's cronies and ushered Reijiro into permanent retirement. Reijiro was allowed to keep his honorary chairman's title and he continued to come to the office daily.

Seiko Holdings expressed "deep sadness" over his death in its statement. "His contribution to Seiko Holdings over many years was exceptional," the company said, "and will be long remembered."

-J.T.

A Box Full of History

Collectors in search of something completely different for storing their watches need look no further. A new watch box from Bremont, headquartered in Oxfordshire, England, is a replica of the famous British Budget Box, seen annually in front of 11 Downing Street when the chancellor of the exchequer announces his budget plans to Parliament.

The first Budget Box was made for William Ewart Gladstone around 1860. Within its scarlet leather case, it was lined with lead, so that it would sink if thrown overboard in the event of its user's capture. The Budget Box, and the ministerial boxes that became widespread in the British government after Gladstone, were some of the

first indestructible cases, intended to survive even a bomb blast. The original Budget Box was used by nearly every chancellor of the exchequer who followed Gladstone, and was finally retired in June 2010.

Just like the original, the new Bremont box is made from pine and lined in black satin and lead. Also like its forebear, it has a lock on the side opposite the handle and hinges. The lock is on the bottom of the box to ensure that its contents are secure before transportation.

The Bremont box is priced at \$5,250. It can be built to custom specifications and holds up to 10 watches. And, in fidelity to the Bremont brand, it is hand-made in England.

-J.D.



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Watch World Appointments

RUPERT STEPS DOWN AS RICHEMONT CEO

Changes in management at the Richemont Group are starting at the top, with Johann Rupert stepping down from his CEO position on April 1. Rupert resumed the role of CEO in 2010, when Norbert Platt retired due to illness. Rupert will stay on as chairman, a position that he has held alongside the CEO title since 2010.

Also on April 1, Bernard Fornas and Richard Lepeu will become joint chief executive officers. Fornas, the former CEO of Cartier, and Lepeu, formerly deputy CEO of the group, have been serving as joint deputy chief executive officers since the start of 2013. Fornas will oversee Richemont's "maisons," the French term for "houses," which Richemont uses to refer to its brands. Lepeu will preside over the central functions of the Richemont Group. Along with Gary Saage, the group's CFO, Lepeu and Fornas will form a new senior executive committee. Fornas was CEO of Cartier from 2002 to 2012. Lepeu has worked in finance and operations for Richemont since 2001 and at Cartier before that.

Meanwhile, Richemont's group management committee is gaining new members from within the group's operating companies. Stanislas de Quercize, who succeeded Fornas as the Cartier CEO, is joining the committee, along with Georges Kern, the CEO of IWC; Jérôme Lambert, CEO of Jaeger-LeCoultre; and Philippe Léopold-Metzger, CEO of Piaget. The group management committee has traditionally had 13 members, and provides contact between the maisons and the Richemont board of directors.

BENNAHMIAS TAKES OVER AT AP

The Audemars Piguet Group named François-Henry Bennahmias as its global CEO on Jan. 18. Bennahmias has been running the company as interim general manager since last May in the wake of Philippe Merk's sudden resignation.



*Clockwise from above:
Johann Rupert, Bernard Fornas,
Richard Lepeu, Gregory
Thumm, François-Henry
Bennahmias*

Bennahmias, 48, joined AP in 1996. He was sent to the United States in 1999 to head the firm's new North American subsidiary. Bennahmias put AP on the American watch map by putting APs on the wrists of a parade of celebrities: actor Arnold Schwarzenegger, rapper Jay-Z, basketball giant Shaquille O'Neal and many more. The strategy worked. Between 2000 and 2008, AP sales in the U.S. market rose 10-fold to \$75 million.

That performance led some AP-watchers to predict that Bennahmias would succeed long-time AP CEO Georges-Henri Meylan when he announced his retirement in 2008. But the AP board opted not to promote from within. Instead, it brought in Philippe Merk, CEO of Maurice Lacroix, to run the firm, based in Le Brassus in Switzerland's famed Vallée de Joux.

It turns out that those who said Bennahmias would get the top job were right after all, just a little premature. In a statement, Jasmine Audemars, chairwoman of the board of directors, noted that Bennahmias won the post by demonstrating in his new position "the same commitment and dynamism" that he had shown in developing the North American market.

At a press gathering at SIHH a few days after the announcement, Bennahmias vigorously denied rumors that Audemars Piguet, which is owned by the descendants of the two founding families, is for sale. "We are not for sale," he declared. "Not a chance." He announced that AP sold 31,000 watches in 2012 and that AP sales reached 600 million Swiss francs (\$652 million). (The group includes AP Reynaud et Papi, the Le Locle-based producer of high-mechanical complications.) Doubtless, the owners are hoping Bennahmias will propel AP's global sales the way he did in the United States.

THUMM NAMED PRESIDENT OF BULOVA

Bulova Corp. named Gregory Thumm as its new president in January. He replaces Dennis Perry. Thumm comes to Bulova from Fossil, Inc., where he was senior vice president from 2004 to 2012. Prior to that, he served for nine years as senior vice president for product development at Geneva Watch Co. Bulova is part of the Citizen Group and based in New York. Bulova's watches are sold under the Bulova, Accutron and Caravelle names. The company also makes licensed watches, including those in the Frank Lloyd Wright Collection.



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- P. Omega
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The Über Watches of SIHH

There are watches and there are *watches*. Included in the second category are pieces so technically extravagant, so hyper-engineered that they belong to a very special club. Their prices are stratospheric. Hardly anyone will ever own one. But they are fascinating nonetheless. As always, this year's

SIHH fair in Geneva in January brought out a fresh crop of these, what we might call "über" watches. Here are five, all with new movements. Due to tight deadlines, they represent a "first take" on SIHH. See our May-June issue for a full report on the new watches unveiled at SIHH and elsewhere in Geneva.



Sixteen high-end watch brands exhibited at SIHH.

Grand Entrance

The classic definition of a grande complication is a watch with a split-seconds chronograph, perpetual calendar and minute repeater. A. Lange & Söhne went beyond the requirements of this definition with its new, limited-edition (six pieces) grande complication: the watch also has grande and petite sonneries. The sonneries sound the time *en passant*, i.e., automatically, as time passes, versus on demand, as with a repeater. The grande sonnerie sounds the full hours on a low-pitched gong and then the quarter hours with a double strike on the low- and high-pitched gongs. The petite sonnerie sounds the quarter hours with one, two or three double strikes on both gongs. Every hour, it sounds the number of hours on the low-pitched gong. You can, of course, turn the sonneries off, by means of a lever, if you want your watch to remain silent.

But there's more: the watch also has, at six o'clock, a chronograph *foudroyante* seconds hand, which jumps frantically around its subdial, completing one revolution per second, and enabling the wearer to time elapsed intervals to the 1/5-second. The intervals correspond to the frequency of the balance, which is 18,000 vph.

The chronograph is a *monopoussoir*: a single button between 1 and 2 o'clock starts, stops and returns to zero the main chronograph seconds hand and the minutes counter, located at 12 o'clock. A pusher located between 10 and 11 o'clock stops the split-seconds hand (which is blue, to distinguish it from the main chrono seconds hand) and, when pushed again, causes it to jump forward to catch up with the other chrono seconds hand. The pusher between 1 and 2 o'clock stops the split-seconds hand and returns it, along with the three other chronograph hands, to zero.

The day and date are shown at 9 and 3 o'clock, respectively. The minute counter at 12 o'clock doubles as a month and leap-year indicator, with four years' worth of months arranged around the subdial, the years demarcated by the numerals 1, 2, 3 and 4.

The movement, Caliber L1902, is manually wound. It has three barrels, two for the going train and chronograph and one for the chiming mechanism. Turning the crown clockwise winds the going train and chronograph mainsprings; turning it counterclockwise winds the chiming-mechanism spring.

The movement is equipped with a Glashütte lever escapement, a type of

straight-line-lever escapement invented by Ferdinand A. Lange, who founded the original A. Lange & Söhne in 1845. The watch also has a hairspring made in house. The movement is 40.5 mm in diameter and 14.2 mm thick. The case, made of rose gold, is 50 mm in diameter and 20.3 mm thick. The U.S. price has not yet been set. In euros, it is 1.92 million.



A. Lange & Söhne's grande complication has a foudroyante seconds hand at 6 o'clock and a four-year month indicator at 12.

Magical Mystery Tour(billon)

Tracing their roots to the early part of the last century, Cartier mystery clocks combine art and magic, with stylish cases housing hidden mechanisms that drive hands that appear to float in space. At SIHH, Cartier introduced two new timepieces that bring this illusion to the wrist. In one version, the hour and minutes hands appear to float within a dial aperture, unattached to any mechanism. The other model is Cartier's pièce de résistance for 2013, the Rotonde de Cartier Double Mystery Tourbillon. In this model, a flying tourbillon appears to float within the dial as it both spins and rotates. The effect is at once mesmerizing and baffling. Cartier achieves this magical manifestation by employing a construction used in its original mystery clocks, and the key to the illusion is sapphire.

In the aperture that houses the tourbillon, a sapphire disk serves as a transparent bridge. Above it, a second sapphire disk acts as the mystery tourbillon cage. This second disk is mounted on a central pivot, allowing it to spin like a horizontal bicycle wheel. Around its perimeter, a toothed metallic ring, hidden by the dial, effectively converts the disk into a large wheel. A special pinion in the gear train meshes with the disk's toothed perimeter, causing it to make one revolution every five minutes.

Mounted on this rotating disk is a traditional tourbillon cage that rotates once per minute. This traditional cage is mounted only at its base, in this case using ball bearings to minimize friction. There is no upper attachment point, hence the "flying tourbillon" designation. To maximize the owner's viewing pleasure, the floating double tourbillon occupies a full 47 percent of the available display space.

Constructing this movement presented numerous challenges. Weight, and the inertia it creates, saps energy, making it the watchmaker's enemy, so 12 of the tourbillon's components, including its cage, are fashioned from titanium. In



A flying tourbillon appears to float within the dial as it both spins and rotates.

some locations, however, gold components are used to counterbalance the tourbillon's weight, leaving the sapphire disk on which it is mounted perfectly poised. The tourbillon cage weighs only 0.28 grams, and the entire double tourbillon mechanism, including the one-millimeter-thick sapphire disk, weighs 1.35 grams. Twin barrels provide the energy

required to make the magic happen. The entire movement is only five millimeters thick.

Because sapphire is susceptible to static build-up, which attracts dust, the tourbillon must be assembled in a laminar, or constantly moving, air flow. To increase precision, some of the tourbillon's components are created using the Deep

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The tourbillon occupies a sizable 47 percent of the available display space.

Reactive Ion Etching, or DRIE, method. Though the movement appears delicate, it receives the same shock-resistance testing as all other Cartier movements, meaning it is subjected to 500 shocks that simulate being dropped from heights of up to one meter.

The Double Mystery Tourbillon will be available in September in three ver-

sions. The unlimited model in platinum on a strap will retail for approximately 120,000 euros (no U.S. prices were available at press time). A 20-piece limited edition with a baguette-pavé case and dial will be priced at €460,000. The top-of-the-line model adds a pavé platinum bracelet. Only five of these will be offered, at €1.2 million each.

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Good Gyration

Like the first two Gyrotourbillon watches from Jaeger-LeCoultre, the new Master Grande Tradition Gyrotourbillon 3 Jubilee has a tourbillon that rotates on two axes thanks to its two carriages. One carriage turns once every 24 seconds and the other once per minute. The point of the two-axis rotation is to improve on the performance of a standard, single-axis tourbillon by keeping the balance moving continuously through a range of positions.

As you might guess, the watch, which is fitted with the new in-house Caliber 176, goes a step further than its predecessors in its quest for precision. Instead of a cylindrical hairspring, like that in the Gyrotourbillon 2, which was already an improvement over a standard, flat hairspring, this watch has a spherical one, which is even more precise, according to JLC. From an aesthetic standpoint, the

tourbillon also has an advantage over its predecessors, the company says: it is a “flying” tourbillon, meaning it has no upper bridge to block one’s view of the cages’ gyrations.

The watch is a single-pusher chronograph. What appears to be a big-date display (albeit one designed for unusually long months of up to 59 days) is actually the chrono minutes counter. Chrono seconds are shown by means of the blue hand in the same subdial. There is a day-night indicator, along with a 24-hour display, at 3 o’clock.

The case is made of platinum and is 43.5 mm in diameter and 15.5 mm thick. There will be 75 pieces made. The price was not available at press time.

The watch is a chronograph with a jumping-minutes display in the sub-dial at 9 o’clock.



The tourbillon rotates on two different axes at different speeds.





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Four in Hand

It's a good thing Roger Dubuis makes its own hairsprings: its new Excalibur Quatuor, equipped with Caliber RD 101, requires a whopping four of them. The watch has four balances arranged concentrically around the movement and placed at an incline. They are intended to perform the same function as a tourbillon – eliminating timing errors caused by the effects of gravity on the balance – but to do it better. As the company explains, the balances work in pairs to "compensate immediately for the rate variations caused by the changes in position." A tourbillon makes its corrections over the span of time required for it to rotate, usually one minute. But the four balances of the Quatuor correct errors instantly, Roger Dubuis says, because they are constantly in four different positions.

The four balances enable the company to make another claim: that the watch has an amazingly high frequency of 16 Hz, or 115,200 vph. That's because each balance beats at 4 Hz, which, multiplied by four, gives you 16 Hz. The claim is fair, the company says, because the balances don't oscillate in unison and therefore provide 115,200 distinct beats every

hour. One consequence of the 16-Hz frequency: the watch doesn't sound like a standard mechanical watch. Rather than ticking, it emits a kind of continuous whirring sound punctuated by percussive accents.

The watch also has an unusual power-reserve display (at 9 o'clock). The display's background, which incorporates two arcs, each tapered so that one end is thick and the other thin, turns at the same rate as the barrel, 4.5 times per day. The pointer on top also turns, but more slowly, so that its position relative to the tapered arcs

changes as time passes and the mainspring's power declines: the pointer moves gradually from the thick ends of the arcs to the thin ends.

The Caliber RD 101 has five differentials for averaging out the rates of the four balances, controlling the power-reserve display and connecting the winding system to the mainspring barrels (there are two barrels). The movement has 590 components. The bridges and plates have been skeletonized to reveal as much of the movement as possible from the front and back.

The watch has yet another notable feature: it is the first watch in the world with a silicon case. The company chose the material, which until now has been used only for movement components, because it is lightweight, weighing only half as much as titanium, and is four times harder than steel. The silicon version will be made in a limited edition of three watches (1 million Swiss francs each; the U.S. price had not been determined as of press time); there is also a rose-gold version (\$422,000), a limited series of 15 pieces.



The Excalibur Quatuor is the first watch with a silicon case.



The back of double-barreled Caliber RD 101, with its four inclined balances spaced evenly around the perimeter

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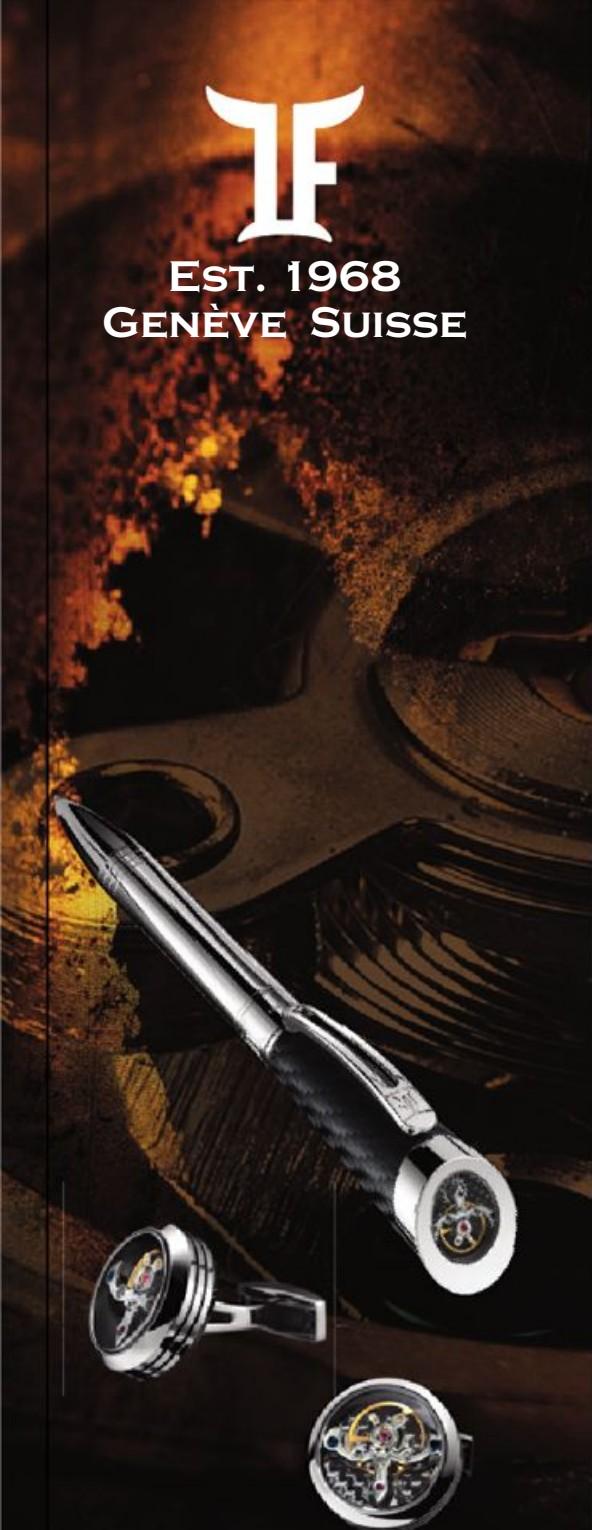


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The watch's two balances are both inclined at 35°.

Twin Peaks

The biggest news from tourbillon maestros Robert Greubel and Stephen Forsey was not a tourbillon, but a watch with two inclined fixed balances with escapements, one visible through an aperture at 9 o'clock and the other between 4 and 6 o'clock. The watch is called the Double Balancier 35°. It averages out the rates of the two balances, thus providing more precise timing than would be possible with a single oscillator, the company says. Greubel Forsey has made a fixed-inclined-balance watch before, but in the earlier watch (from 2011), the balances were superimposed one on top of the other.

The company says the inclined oscillators improve precision in three

ways. First, because they are inclined, they "significantly reduce the possibility to be in either a horizontal or vertical position." Secondly, the company says, "the two inclined fixed oscillators are linked by a spherical differential that averages rating differences and ensures an optimal performance at all times whether in stabilized (horizontal or vertical) positions or dynamically (on the wrist)." Lastly, the company points out, the fact that the balances are inclined means they take up less horizontal space and can therefore have a larger diameter. A larger balance generally results in better timekeeping.

There is a seconds subdial at 7 o'clock, which displays the running instantaneous average of the two balances. A power-reserve display sits at 2 o'clock. The movement, which is hand-wound and beats 21,600 times per hour, has a power reserve of 72 hours and is powered by two co-axial barrels. It has 365 components, 28 of which make up the spherical differential. The case is made of white gold and is 43.5 mm in diameter. The company will make six pieces. The price: 390,000 Swiss francs (U.S. price not available at press time).

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By Land or By Sea

The Omega Seamaster Aqua Terra GMT
is equally at home in water or on land.
How well did this versatile timer perform
in our test?

BY JULIA KNAUT
PHOTOS BY NIK SCHÖLZEL



Pros

- + Handsome, highly detailed design
- + High-performance *manufacture* caliber

Cons

- The polishing and finishing aren't perfect.



Omega's Seamaster Aqua Terra GMT confirms the longevity of the Seamaster collection: the first Seamaster was introduced in 1948. The Seamaster Aqua Terra Co-Axial GMT Chronograph debuted in 2009. It incorporated the co-axial escapement designed by English master watchmaker George Daniels. The version we tested, which has the co-axial escape-ment but no chronograph, was introduced at the Baselworld show in 2012.

As its name suggests, the Seamaster Aqua Terra GMT is well suited for use in water or on land. It is water resistant to 150 meters and is equipped with a second-time-zone display. And thanks to its sporty yet elegant exterior, it looks as good going sailing as it does on an evening out.

The watch has a sleek, well-balanced design. Its shiny black dial sports vertical lines that bring to mind the wooden decks of luxury boats. (Omega calls these "teak concept" dials; they're on all Aqua Terra models.) The case, which is made of stainless steel, identifies this watch as part of the Seamaster family: polished and satin finishes, a curving cut along the sides, and lugs that slope downward are its distinguishing features. At first this watch might appear to be quite basic in design, but a closer look reveals carefully crafted details. The wedge-shaped, stainless-steel indices are flattened toward the center of the dial, which gives each a three-dimensional look. The sides of the faceted hands are satin finished. Both the indices and the hands are coated with white Super-LumiNova, which has been precisely applied. Omega has given similar meticulous care to the case, which is well crafted from the crown to the bezel. The only shortcoming we found was that the polishing on the inner surfaces of the lugs isn't quite perfect.

The crown is easy to grasp and makes setting the correct time when traveling quite simple. Once you have unscrewed the crown, you can find its setting positions quickly. Turning the crown in its first pulled-out position moves the hour hand forward or back in one-hour increments; you don't have to spin the minutes hand to reset the hour hand. Turning the crown in its second pulled-out position lets you set the time in a second time zone. A watch with a GMT function has a second hour hand, which completes one full rotation in 24 hours, and a 24-hour index on the dial. On this watch, the GMT hand has a red arrow-head at its tip and is coupled to the minutes hand so both hands move at the same time. The seconds hand stops when the crown is pulled out to its second position so you can set the time with to-the-second precision. It takes a bit more work to reset the date display at 6 o'clock because this indicator can only be corrected by moving the hour hand forward or back.

**THE MOVEMENT
SHOWED AN AVERAGE
DAILY GAIN OF ABOUT
SIX SECONDS.**



The crown is easy to grasp and fits nicely into the polished and satin-finished side of the case.

The time is easy to read thanks to the matte finish applied to the upper portions of the indices and hands, which prevents glare despite their polished sheen. Each hand has a distinctive shape and the indices are coated with white Super-LumiNova, which heightens their contrast against the black dial. The red arrowhead on the tip of the GMT hand makes it easy to identify. The luminous displays on the dial glow brightly and continue to show the time after the sun has set.

Since we liked so many features of this watch, we were sorry to see that the tip of the minutes hand doesn't extend all the way to the minutes markers. Omega didn't modify the minutes hand to fit this larger, 43-mm case but used the same minutes hand that is on the smaller, basic model of the Aqua Terra, which has a 41.5-mm case. We also found the small date display at 6 o'clock with its black background hard to read.

Omega's Caliber 8605 ensures that the watch performs with an exact and reliable rate. The 8605 is made in house and is based on the Omega 8500, introduced in 2007. The 8500 was the first movement to incorporate George Daniels's co-axial escapement. The movement has two barrels in series to deliver

TEST

Omega Seamaster Aqua Terra GMT

The manufacture caliber is decorated with the brand's unique pattern, but not much of the movement can be seen.

SPECS

OMEGA SEAMASTER AQUA TERRA GMT

Manufacturer: Omega S.A., rue Stämpfli, 96, CH-2504 Biel/Bienne, Switzerland

Reference number: 231.13.43.22.01.001

Functions: Hours, minutes, seconds; the date display can be reset via the hour hand, which is adjustable in one-hour increments; second time zone; stop-seconds function

Movement: Omega 8605, automatic, chronometer; 25,200 vph, 38 jewels, co-axial escapement, fine adjustment via two screws on the freely swinging balance, two serially arranged barrels, Nivachoc shock absorption, 60-hour power reserve; diameter = 29 mm, height = 5.5 mm

Case: Stainless-steel case with domed sapphire crystal that's nonreflective on both sides; fully threaded screw-in back with a sapphire window; water resistant to 150 meters

Strap and clasp: Alligator strap with safety folding clasp made of stainless steel

Rate results:

(Deviations in seconds per 24 hours)

Dial up	+7
Dial down	+6
Crown up	+7
Crown down	+5
Crown left	+6
Crown right	+6
Greatest deviation of rate	2
Average deviation	+6.2
Mean amplitude:	
Flat positions	238°
Hanging positions	220°

Dimensions: Diameter = 43 mm, height = 13 mm, weight = 112 g

Price: \$7,800



The dial has a teakwood-like pattern and elaborately crafted indices and hands.



more stable power. It has a 60-hour power reserve. Like the 8500, the 8605 has a freely swinging balance and two barrels and is COSC certified. It's also adorned with the brand's own decorative pattern. For caliber 8605, Omega added a GMT module to the 8500, a feature for which it was originally designed. The basic caliber had already been equipped with an hour hand that could be reset in one-hour increments, indicating that its developers intended the 8500 to evolve into a caliber that would support a GMT function.

On our timing machine, the new caliber kept time quite well, showing an average daily gain of approximately six seconds and a maximum deviation among the various positions of two seconds. The balance showed a mean amplitude of only 238 degrees in flat positions and a mere 220 degrees in hanging positions, lower than in other Omega movements.

Whether you're close to home or far away, you won't have to be afraid of losing this watch thanks to the securely folding clasp on its alligator strap. The strap is first fastened with a prong and then firmly attached to your wrist by a large stainless-steel clasp. Slipping the prong through one of the holes in the strap is a bit cumbersome and can cause the leather to wear out, but this action should be necessary only once – the first time you slip the watch onto your wrist. The clasp has only one hinge so it's easier to use than a double-folding one.

The strap and clasp are well crafted. The semi-rembored alligator strap is neatly sewn, although the holes left by the artisan's needle are frayed at a few places on the underside. The clasp is embellished with a nice matte finish, but tool marks are slightly visible on the inner sides. All in all, the strap and the clasp are neatly crafted but not quite as elaborately finished as the dial.

Omega Seamaster Aqua Terra GMT

This watch fits well on the wrist. Nothing presses uncomfortably against your skin. The rounded back of the case is so comfortable that you are hardly aware of it. One end of the leather strap runs under the folding clasp, assuring that very little metal comes in contact with your skin. You'll especially like this detail during the summer months. However, we found it to be a bit less comfortable if you have a smaller wrist.

Anyone who decides to part with \$7,800 to purchase this handsome and useful travel companion will get plenty of watch for his money. But the cost-benefit ratio of the tested watch isn't quite as good as that of the basic model. Except for the absence of a GMT display, the three-handed model is identically equipped and costs \$2,800 less. However, the price doesn't seem

quite so high when you compare it to the prices that other brands charge for their GMT watches. If you're willing to pay the extra money for the GMT function, then you'll really enjoy this sporty yet elegant watch that ensures you're well dressed wherever your travels take you. ○

SCORES

OMEGA SEAMASTER AQUA TERRA GMT

Strap and clasp (max. 10 points):

The strap and clasp are well crafted but are less elaborately made than the watch's other components. **8**

Operation (5): The crown is easy to grasp and you can find its setting positions quickly, but resetting the date is more difficult. **4**

Case (10): The case is well crafted, with the sole exception of the inner sides of the lugs, which are not perfectly polished. **8**

Design (15): Distinctive, well-balanced design; closer inspection shows elaborate details. **14**

Legibility (5): The dial is easy to read both day and night, but the minutes hand is too short. **4**

Wearing comfort (10): This watch fits comfortably, but it's a bit less comfortable on a smaller wrist. **8**

Movement (20): The brand's in-house base caliber 8500 has been upgraded to include a GMT module, for which it was originally designed. **18**

Rate results (10): The average daily gain of approximately six seconds isn't quite perfect, but the values among the positions deviate from one another by no more than two seconds. **8**

Overall value (15): In return for a rather tall stack of coins, the buyer gets an upgraded *manufacture* caliber in a handsomely styled case. **12**

TOTAL: **84 POINTS**



Scan here to read our test of the Omega Seamaster Aqua Terra.
<http://www.watchtime.com/?p=27010>



DEEP BLUE



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OMEGA



MILESTONES

*A survey of 25 of the
most important watches
Omega has ever made*

BY GISBERT L. BRUNNER

1967





1892

FIRST MINUTE- REPEATER WRISTWATCH

The world's first minute-repeater wristwatch was unveiled in September 1892 by the Biènne, Switzerland, firm of Louis Brandt & Frère, precursor to today's Omega watch company. Brandt had chosen Audemars Piguet in Le Brassus to modify a 13-ligne Lépine ébauche that Audemars had purchased from the ébauche maker LeCoultré & Cie. The striking mechanism was triggered by a slide at 3 o'clock. The complex wristwatch case strongly resembles

that of a pocketwatch. Engraved on the dust cover is a phrase in French that translates as "Excluded from the competition: juror, Paris 1889." The engraving suggests that the watch had been exhibited at the Chicago World's Fair in 1893, but had not been allowed to participate in the competition for medals because César Brandt, who ran the firm with his brother Louis-Paul, had served on the jury of the Paris World's Fair in 1889.



1894

OMEGA IS BORN

The year 1894 saw the birth of the name that would eventually identify the company: Omega. Originally the name was given to a pioneering 19-ligne pocketwatch caliber, Caliber 19, that the Louis Brandt & Frère firm began producing that year. The movement was a considerable achievement: the construction was simple but reliable, and all components could be removed and replaced with standardized spare parts. Interchangeable parts were the exception rather than the rule for watch manufacturing in this era. The idea for the name came from Henri Rieckel, the firm's banker, who felt that Omega – the last letter of the Greek alphabet – was a perfect name for a caliber that was "the last word" in watchmaking. The company introduced a collection of pocketwatches containing Caliber 19 with the Omega name on the dial. The firm registered the name internationally as a protected trademark on March 10 and April 13, 1894. It became the name of the company in 1903.

1900

FIRST OMEGA WRISTWATCH

The first wristwatches bearing the Omega name were produced in 1900 and used by British officers in South Africa's Boer War (1899-1902). Omega was one of the first firms to begin serial production of wristwatches. The watches withstood the rough treatment they got. An Omega advertisement in a watchmakers' magazine in Leipzig in 1904 publicized the testimony of a British artillery officer whose Omega wristwatch performed admirably in bitter cold, searing heat, torrential rain and merciless sandstorms. The lieutenant colonel concluded that "The wristwatch is an essential campaign element." The wristwatches were powered by a Lépine 12-ligne Caliber HN B and were available in two versions: one with the crown on the right, to be worn on the left wrist, and the other with the crown on the left for wearing on the right wrist.



1916

WAR WATCHES

During World War I, many military officers switched from pocketwatches to wristwatches. A wristwatch could be read without first digging it out of an overcoat pocket, plus it didn't have to go back into the pocket afterwards. This convenience appealed to soldiers in mile-long trenches and fortified bunkers. Omega's hand-wound, 13-ligne Caliber SO was a precise and rugged movement suitable for wartime conditions. This caliber was probably first used in

1916 in wristwatches with simple round cases made of either silver or nickel and equipped with luminous material on their hands and sometimes their dials. But the fragility of the crystals above the dials repeatedly caused problems. Martial-looking protective grids were an attempt to solve the problem. Among the early military customers was the Signal Corps of the American Expeditionary Forces, which supported the Allies starting in July 1918.

1929

MONOPUSHER CHRONOGRAPH

In the final year of the 1920s, Omega launched chronograph Caliber 39 CHRO L 17 p, a movement with a button built into the crown to operate the chronograph mechanism. The wearer pushed the crown to start it, stop it and return its hands to zero. The switching mechanism with column wheel was developed by LeCoultre in Le Sentier expressly for Omega. Omega shifted production to its own workshops in Biel/Bienne in 1934. The 39-mm-diameter Lépine movement, with a counter for 30



elapsed minutes at 3 o'clock, was notable for the extraordinarily precise positioning of the bearing bore holes. This precision improved the functioning of the mechanism. It also made it easier for watchmakers to exchange old components for new ones when they serviced the caliber. The gold model debuted in 1929: it had moveable strap lugs and a patented enamel dial with a spiral tachymeter scale capable of measuring average speeds from 10.5 to 300 km per hour.



1932

OLYMPIC TIMER

A flyer circulated at the 1932 Olympic Games proudly announced that "Omega timepieces were chosen as the only official timepieces at the 1932 Olympic Games in Los Angeles." Afterwards, the technical director of the Olympic Games, William M. Henry, praised the performance of Omega's timer, a split-seconds chronograph (type MG 1134) pocketwatch with 30-minute counter. Its movement was a top-notch, gold-plated, 24-ligne, hand-wound caliber with a Breguet balance spring and a bimetallic compensat-

ing balance with a frequency of five hertz. The watch had a diameter of about 60 mm. The seconds scale on its fine enamel dial was divided into fifths of a second. The 30-minute counter was positioned at 12 o'clock. The watch enhanced Omega's reputation as a manufacturer of highly precise timepieces. Omega had introduced the chronograph in 1930. Several variations of Caliber 53.7 CHROR, including one whose balance had a frequency of 10 hertz, were produced in subsequent years.

1932

MARINE DIVER

A 1942 issue of the German watchmakers' magazine Uhrmacher-Woche ("Watchmakers' Week") devoted an article to waterproof watches. "When the first waterproof watch debuted 15 years ago," the magazine stated, "many people dismissed it as fashionable foolishness or a publicity stunt because, after all, it really isn't necessary to wear a wristwatch while bathing." Maybe so, but the impulse to develop wristwatches for swimmers and divers was unstoppable. Omega introduced its first divers' watch, the Marine, in 1932. Four years later, it chose Lake Geneva as the venue for the presentation of its newest "Marine" model with hand-wound Caliber 19.4 SOB T2. It was built for people who love water, but the manufacturer was mum about how water resistant the watch actually was. Nevertheless, on June 29, 1936, the watch, which had an angular, bipartite sliding case, emerged undamaged after having spent 30 minutes in the lake at a depth of 73 meters. It bested its own performance a year later, when it withstood a pressure of 140 meters for 14 hours. Thanks to its unconventional and complex case mechanism, which still fascinates collectors today, this divers' watch was both pioneering and exotic.



1939

THE 30-MM CALIBER

Historically, Omega is Switzerland's second most prolific producer of officially certified Swiss chronometers (Rolex is first). One reason is Omega's Caliber 30 mm, a hand-wound caliber with a subdial for the seconds at the 6, introduced in 1939. Omega followed it with Caliber 30 T2 RGSC in 1943. The first number (30) denotes the caliber's diameter (30 mm). "T2" means "second transformation," i.e., a modification of the original movement. "SC" specifies the version with *seconde centrale*, i.e., a center seconds hand. "RG" is an abbreviation for *raquettière à régulateur*, an innovative fine adjustment mechanism for the index. The new caliber also had a bimetallic screw balance and Breguet hairspring. Four of these movements broke all previous records for accuracy in the 1940 chronometer competition at Kew-Teddington Observatory, earning 90.5 of



100 possible points. The British Ministry of Defense commissioned Omega to produce 110,000 waterproof wristwatches in 1943. Destined for the wrists of British soldiers, each watch contained the 30-mm caliber.



1947

FIRST TOURBILLON WRISTWATCH

Omega was the first Swiss watch company to produce a tourbillon for the wrist. It commissioned Marcel Vuilleumier, director of the school of watchmaking in Le Sentier, to study the possibility of a wrist tourbillon. Vuilleumier was sure that a tourbillon in a wristwatch would be subjected to significantly stronger stresses than in a pocketwatch. This meant that the delicate rotating cage ought to be given more time to complete one full orbit than the tourbillon in a pocketwatch. Vuilleumier built the first wrist tourbillon caliber, 30 I, using the 30-mm movement of 1939. Noted prototypist

Jean-Pierre Matthey-Claudet made 12 experimental tourbillon wristwatches for Omega. The watches were made to compete in precision competitions. Each watch's tourbillon required 7.5 minutes to rotate around its axis, a variation on the classic rate of one revolution per minute. Some of these watches achieved excellent results in chronometer competitions between 1947 and 1952 at Kew-Teddington, Neuchâtel and Geneva. One of them (tourbillon number 10.595.933) set a record high score (867.7 points) for wristwatches at a competition sponsored by the Geneva Observatory in 1950.

1948

SEAMASTER

René Bannwart is considered the father of the Omega Seamaster line. The man who would later found Corum had begun building Omega's design department in 1940. This was new. At that time, sketches for new models were usually drawn by draftsmen in watch-case factories. Bannwart's decision set Omega on a new path that other brands would soon follow. To celebrate Omega's 100th anniversary, Omega sales director Adolphe Vallat asked Bannwart to develop a sporty, robust and waterproof wristwatch. Bannwart felt that Vallat wasn't giving him enough time, so he presented one of his case designs with the comment "much too clunky." To Bannwart's surprise, Vallat was delighted. The result was the Seamaster family. It had its origins in watches supplied to Britain's Royal Air Force in World War II. The 1948 civilian version of the pilots' watch had a water-resistant case (to 50 meters), a screwed caseback with lead gaskets, a reinforced crystal, a silvered dial, and polished and riveted Arabic numerals. The version with small seconds, which was also available as a certified chronometer, contained the new automatic Caliber 28.10 RA RG-343. The model with a central seconds hand was the 28.10 RA SC-350.





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1952

CONSTELLATION

Omega began using the name "Constellation" in 1952 to denote its officially certified wrist chronometers. The premier model was powered by Caliber 28.10 RA SC PC RG AM (nicknamed the "352"), which first appeared in 1945. This caliber wound itself via a unidirectional hammer-type winding weight. It also featured an indirectly propelled central seconds hand. The 28.1-mm-diameter, 5.4-mm-thick movement passed the official chronometer tests with flying colors. Its sturdiness, reliability and precision prompted Omega to produce the Constellation in large numbers. This model was also Omega's first serially manufactured wristwatch chronometer.



1953

RAF BROAD ARROW

When it presented the RAF model in 1953, Omega already had several decades of experience in the production of military pilots' watches. The RAF was commissioned by Britain's Royal Air Force (RAF). Inside the water-resistant steel Staybrite case with screwed back and lead insulation, Omega installed the third generation of the legendary 30-mm caliber from 1939, the 30 SC T3-283. The hand-wound movement with central seconds hand was finely adjusted in four positions until its daily deviation was no

more than 10 seconds. The movement was surrounded by a soft iron inner case to protect it against magnetic fields up to a maximum strength of 900 oersteds. (Ordinary wristwatches can resist only about 60 oersteds.) Its dial was 0.4 mm thick instead of the usual 0.1 mm. The 5,900 pieces produced featured the so-called "Broad Arrow" in the bottom half of the dial. (The Broad Arrow was a symbol identifying property of the British Ministry of Defense.) The inventory number was engraved on the back of the case.





1957

SPEEDMASTER

The Omega Speedmaster, destined to become the most famous chronograph in the world because of its use by NASA for the Apollo program, was introduced in 1957. But the Speedmaster story really begins in 1943 with chronograph Caliber 27 CHRO C12, developed by Jacques Reymond. Born into a long-established family of watchmakers, Reymond had joined Omega's subsidiary Lemania in 1942. The "CHRO" in the caliber designation stood for "chronograph," the "27" referred to the movement's diameter in millimeters, and "C12" denoted the additional counter for 12 elapsed hours. Further developed by

1959

CONSTELLATION STAR

Connoisseurs of fine, reliable and precise automatic calibers know Omega's Caliber 551 (Caliber 27.9 RA SC Bull-551) of 1959. This 12½-ligne movement had a diameter of 27.9 mm and a thickness, despite its winding mechanism, of just 4.5 mm. Its Glucydur balance had a frequency of 19,800 vph. With the help of a patented reverser, the oscillating weight wound the mainspring in both directions of rotation. The caliber was remarkably successful and turned the Constellation model that contained it into a star.



Albert Piguet in 1946 and christened by Omega with the shorter name "321," this movement was the smallest of its type at the time. Credit for the Speedmaster case design belonged to a group at Lemania, including designer Claude Baillod, prototype-maker Georges Hartmann and machinist Désiré Faivre. The watch's salient features were a black dial, luminous hands, a tachymeter scale, water-resistant case, screwed back and domed Plexiglas crystal. The diameter was originally 39 mm. A 40-mm version with the tachymeter scale on a black background along the flange appeared in 1960.



1967

DE VILLE

Omega launched De Ville as a separate line in 1967. It had been a collection within the Seamaster line since 1960. Simpler, younger, more colorful, and more varied than the Seamaster, it quickly became Omega's best-selling collection. The name stood for an entire philosophy because the De Ville wasn't created at Omega's headquarters in industrial Bienne, but in sophisticated Geneva. The collection was intended to represent a new urban elegance. The designers had sought and found a modernistic element in wristwatch design. The collection included rectangular models containing the ultra-slim hand-wound Caliber 620. The synthesis of modernity and timelessness turned out to be just right. Omega De Ville wristwatches won six "Golden Roses" at the Baden-Baden design awards in the 1970s as well as the coveted Grand Prix Triomphe de l'Excellence Européenne.

1970

SEAMASTER PLOPROF

In 1970, Omega developed a different and extremely sturdy Seamaster to meet the needs of professional divers who were descending to greater depths. The Seamaster 600 Ploprof (short for *plongeurs professionnels*, French for "professional divers") was water resistant to 600 meters. The conventional case construction of the Seamaster 300 of 1957 simply wasn't able to withstand that much pressure. Omega technicians opted for a monocoque (single piece) case that had been patented (number 480.680) in 1967 and milled from a solid block of steel. There were only two ways for water to enter the case. One was through the opening for the crown. To prevent that,

Omega developed a specially protected and threaded crown. The other way water could enter was through the joint between the case and the crystal. Omega prevented that by pressing the crystal, made of mineral glass with a nonreflective coating, onto the O-ring with 120 kg of pressure. The Ploprof had no helium-release valve because the case was designed to prevent helium from entering it in the first place. A blocking system with a button at 2 o'clock prevented unintentional repositioning of the dive-time bezel. The watch was powered by Caliber 1002.



1973

SPEEDMASTER 125



1974

MEGAQUARTZ 2400

Omega first exhibited prototypes of this caliber at the Basel watch fair in 1970. The Megaquartz 2400 owed its existence to technical cooperation between Omega and the Batelle Institute in Geneva. The engineers achieved this caliber's infinitesimally small rate deviation of just one second per month with the aid of an encapsulated quartz resonator with a frequency of 2.4 megahertz. After extensive research, Omega unveiled Caliber 1511 in 1974. It was the first caliber to earn the title of "marine chronometer" from the Astronomic and Chronometric Observatory of Neuchâtel. After 63 days of tests, the daily rate deviation was a mere 2/1,000s of a second, or 0.73 seconds per year. It was the world's most precise wristwatch. It was also the first watch equipped with a "TSA" (time-zone and second adjustment) device that enabled the wearer to reset the hour hand for the time in a different zone without affecting the minutes and seconds hands. Furthermore, the seconds hand could be stopped to synchronize the watch with a time signal.

To celebrate its 125th anniversary, Omega produced the world's first officially certified automatic chronograph produced in series, the Speedmaster 125. It manufactured 2,000 Speedmaster 125 watches. They were powered by Caliber 1041. The watch was developed by Raoul Henri Erard of Lemania. It showed the seconds and the elapsed minutes from the dial's center and had a count-

er for 12 elapsed hours at 6 o'clock. A 24-hour display at 9 o'clock showed whether it was day or night. The dial was available with various additional scales (tachymeter, telemeter, pulsometer or decimal subdivisions). In 1978, the Russian cosmonaut Vladimir Dzhanibekov wore the Speedmaster 125 aboard the Soyuz 26 and Soyuz 27 space flights to the Salyut 6 space station.



1985

SAND WATCHES

Visitors to Omega's stand at the annual watch fair in Basel in 1985 could admire a treasure chest containing six unconventional pocketwatches: the Montres des Sables or Sand Watches. They were so named because of their unusual appearance, which suggested a desert landscape. The watches were the brainchildren of Dominique Loiseau, who had impressed connoisseurs the previous year with his highly complicated La Rose des Temps table clock,

which performed 32 functions. Each of the six pocketwatches was equipped with a seven-millimeter-thick flying tourbillon. The cases were only 12 mm thick. In addition to displaying the hours and minutes and containing a tourbillon, each boasted a different feature: perpetual calendar, minute repeater, day-night display, moon-phases, puzzle, or a display of five Muslim prayers. The price for the collection was about 250,000 Swiss francs.



1994

FIRST CENTRAL TOURBILLON

Omega marked the 100th anniversary of the Omega name with a world first: a watch with the tourbillon mechanism in the center. There was no bridge above the rotating carriage to interfere with the view. This was a flying construction, with the tourbillon cage carrying an eye-catching Omega symbol and a small seconds hand. The hands for the hours and minutes moved "mysteriously," i.e., without visible means of propulsion, above the guilloche dial. The trick: the hands were printed onto thin, nearly invisible disks of transparent sapphire. The hour and minutes disks were set via a separate crown integrated into the case-back. On this unconventional automatic movement, Caliber 1170, the rotor (made of platinum and iridium) was fixed to the back of the case. The watch had a 54-hour power reserve.



1998

MARSWATCH

The Omega Speedmaster Professional X-33 watch was developed over a span of five years through Omega's collaboration with American and European astronauts and pilots of the Blue Angels and Thunderbirds. The watch was designed so it could be used inside space shuttles (hence the "Mars Watch" nickname) and by someone wearing gloves. The watch had a titanium case and a hybrid, analog-digital display. Its movement, Caliber 1666, with a quartz regulator, displayed universal time and had a marathon chronograph that tallied each mission's elapsed time. The alarm for the universal time was very loud in order to be heard over noises in the shut-

tle. The volume reached a maximum level of 80 decibels. Additional complications were a 1/100-second chronograph and a countdown function. The date could be displayed in the international format (month/day/year) or European style (day/month/year). All of the digital functions of the caliber could be controlled via the crown and four pushers. The figures and legends on the digital display were legible in the dark thanks to high-powered illumination. The X-33 had an accuracy of between -0.3 and +0.5 seconds per day. The case was water resistant to 50 meters. The watch could withstand temperatures ranging from -20 to +70 degrees Celsius.



1999

CO-AXIAL ESCAPEMENT

The Omega De Ville Co-Axial contained automatic Caliber 2500, the first wrist chronometer with a co-axial escapement. The escapement was invented by English master watchmaker George Daniels. Omega developed Daniels's design so that it could be manufactured in large quantities. Caliber 2500 was a modified self-winding movement from Omega's Swatch Group sister, ETA. The co-axial escapement went a long way toward solving two fundamental problems that had plagued long-lasting precision timekeeping. First, every change in the viscosity of the lubricant oil detracted from the regularity of the rate behavior. Second, over time, the oil gradually disappeared from the locations where it was most needed in the movement. Daniels revised the architecture of the impulse-giving elements to reduce both the friction and the influence that the lubricant's viscosity exerted on the balance's amplitude. Unlike conventional escapements, his co-axial escapement consists of an intervening wheel, a co-axial wheel and a lever with three pallet jewels. The lever acts only when the balance swings counter-clockwise. To fully exploit the advantages of this escapement, 27-jewel Caliber 2500 had a Glucydur balance with a frequency of 28,800 vph and a flat, freely swinging hairspring. The movement debuted in a simple round case for which Omega reactivated the name "De Ville."



2007

HOUR VISION

Omega's De Ville Hour Vision chronometer made headlines when it was launched in 2007. In 2000, Omega had begun developing an exclusive automatic movement, Caliber 8500, under the direction of the design engineer Marc-André Miche. The fabrication was originally done in cooperation with Omega's sister company, ETA, but is now performed entirely in Omega's workshops. Caliber 8500 was equipped with an upgraded version of the co-axial escapement. It boasted other new features, including a rotor with zircon bearings that seldom required servicing, an innovative reverser wheel that polarized the rotor's rotations, two serially switched, DLC-coated barrels for 60 hours of power, and a reworked profile on the gears' teeth. An added bonus was that the movement supported an independently adjustable seconds hand. The case's sides were made of transparent sapphire, affording a view into the movement.

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2010 CO-AXIAL LADYMETIC

Wristwatches for women have played an important role at Omega since the early years of the 20th century. The company highlighted its ladies' models again in 2010 with the revival of the Ladymatic line. Launched in 1955, the Ladymatic was Omega's first ladies' automatic wristwatch. In the new collection, women can choose between rose gold, yellow gold or steel, with or without diamonds. Each model has a polished 34-mm-diameter case. The caseback is transparent, inviting the watch's owner to admire the co-axial Caliber 8520 or Caliber 8521 with a silicon balance spring.

2011

PLANET OCEAN LIQUID METAL

Omega entered uncharted waters in 2011 with the introduction of the 32.5-mm-diameter and 7.6-mm-thick self-winding Caliber 9300. Among its most innovative features is a complex escape wheel with unusually elongated teeth, manufactured using photolithographic LIGA technology. The movement relies on a black balance with a frequency of four hertz and a variable moment of inertia. The watch has a silicon hairspring. Two mainsprings team up to provide more than 60 hours of power. Omega installs two se-

rially switched barrels coated with DLC to minimize friction. The rotor, which winds in both directions, is positioned above the movement and runs on ceramic bearings. A column wheel controls the chronograph functions. A vertical coupling connects the movement with the chronograph when the stopwatch function is switched on. The case of the Seamaster Planet Ocean is particularly appealing thanks to the bezel's colored, scratch-resistant inlays, which are manufactured using the brand's own liquid-metal technology.



Scan here to read the in-depth history of the Omega Moonwatch.
<http://www.watchtime.com/?p=16610>



Scan here to read our test of the Omega Seamaster Ploprof.
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Vulcain CEO Bernard
Fleury in front of
Vulcain's headquarters
in Le Locle

IN VILLA VULCAIN

A refined and elegant mansion in Le Locle is home to Vulcain and its boisterous Cricket watch.

BY GWENDOLYN BENDA

When you stroll through the town of Le Locle, in the Swiss Jura, you'll come upon many watch companies. Among them is Vulcain, headquartered on Chemin des Tourelles (French for "Turret Road"), in a villa surrounded by gravel paths, landscaped borders and lofty trees. The brand moved here a little over a decade ago. A tall iron gate leads you toward the building. The roof extends far outward, hinged shutters adorn its windows, and its balconies and terraces invite you to bask in the late afternoon sun.

The villa provides working space for the company's 20 employees and its CEO, Bernard Fleury. In 2001, Fleury and several investors acquired the Vulcain brand, which had been dormant

since the 1980s. "Vulcain shut down after the quartz crisis," Fleury says. This is when the schematic diagrams for Vulcain's Cricket alarm caliber, the brand's flagship product and the very core of its identity, disappeared into a drawer because no one was interested in mechanical wristwatches anymore.

But now Vulcain is back, and with it the Cricket.

Fleury is clearly quite proud of the brand's legacy, which goes back long before the Cricket's appearance in 1947. The brand traces its roots to a watch merchant named Maurice Ditisheim who moved to La Chaux-de-Fonds from Alsace in 1858. Together with his brothers, Gaspard and Aron, Maurice Ditisheim established and enlarged the business, which was active throughout

Europe and in the United States. The Ditisheim brothers exhibited their merchandise at the Exposition Universelle in Paris in 1889 and at the World Columbian Exposition in Chicago four years later. They made complicated pocketwatches, including those with repeaters and perpetual calendars. The cases were embellished with engravings, pearls and miniature enamel paintings. "Vulcain" was first incorporated into the company name in 1898, which by then had its own manufacturing facility. "Ditisheim & Cie, successeurs de Maurice Ditisheim, Fabrique Vulcain" became the company's new name.

The craft of decorating watches continued to be a priority for Vulcain as the decades passed. When the Great Depression hit, it became essential. "People



could no longer afford to invest in complicated technical mechanisms,” Fleury says. Instead, they favored more reasonably priced, decorated watches. The fashions of the times were most strongly influenced by art deco, with abstract graphic patterns used on watch cases.

IT WAS DURING THE 1940s that the company developed the watch by which it would from then on be identified. In

1942, Vulcain chief Robert Ditisheim, an engineer and the grandson of Maurice Ditisheim, began developing an alarm caliber for a wristwatch. Other companies had tried to design alarm wristwatches but, due to the very limited space inside a wristwatch case, none had been able to come up with one that was loud enough to awaken its wearer. Furthermore, the vibrations from the alarm mechanisms disrupted the watches’ time-keeping. Ditisheim called on physicists, engineers and acoustics experts to help design the movement.



The Presidents' Classic



*The original Cricket,
launched in 1947*



*Vulcain's first alarm movement (right)
debuted in 1947.
It served as a basis
for the construction
of the Caliber V-10
(above), which
premiered in 2002.*



Vulcain's headquarters in La Chaux-de-Fonds around 1898



Five years later, the company launched its solution: the Cricket, containing the famous Caliber 120 alarm movement. The watch got its name from the alarm’s shrill sound.

“The development involved no fewer than five different challenges,” Fleury says. “The alarm mechanism had to be miniaturized to fit inside a wristwatch and it had to be integrated into a mechanical movement. The watch and the alarm each needed energy. And the chirping sound of the alarm had to be conveyed outward from inside the case. Simultaneously, however, the developers had to make sure that the case’s seal remained intact and that the overall size of the housing remained within acceptable limits.” The Cricket’s alarm was not just loud, it was long: lasting nearly 25 seconds.

The Cricket garnered huge amounts of publicity. It was a hit in the United States. President Truman wore one, visible in many photos of him. So did President Eisenhower. Richard Nixon received a Cricket as a gift in 1955 after he gave a speech at a meeting of the National Association of Watch and Clock Makers, and later wrote of the watch to Vulcain, “It has given excellent service over



Beautiful enamel painting distinguishes the covers and cases of the oldest watches in Vulcain's history.



Early pocketwatches like this one from 1889 included complications such as perpetual calendars and repeaters.

the past five years and has served as my alarm clock around the world." In 1964, President Johnson appeared on the cover of Newsweek wearing a Cricket. This succession of Cricket-wearing presidents caused the company to give the watch the nickname "The Presidents' Watch."

It was no surprise that when Fleury acquired the brand he immediately resuscitated the Cricket. In 2002, he re-launched the brand through his new company, Production et Marketing Horloger SA, and set up shop in the Chemin des Tourelles villa, which he had bought and converted to a factory and

office space after spotting it one day while driving through Le Locle.

Excellence Holdings acquired Vulcain several years ago. Jaermann & Stübi, a second watch brand in the group, shares the building with Vulcain. Without leaving his office, Fleury can look through a glass door into the neighboring room that houses the marketing and construction division, which is made up of two people. One of them, Sonja Hirschi, the brand's designer and engineer, isn't old enough to recall the company's glory days before the quartz crisis. She joined Vulcain soon after it

was reborn and worked on the reconstruction of the alarm movement.

"Everyone hoped that a movement of its own would make the brand independent," she says, "so the first task for the design-engineering division was to digitize the old plans." The historical mechanism was upgraded to embody the latest technology: for example, the balance's staff was given modern shock absorbers.

The new Cricket movement, hand-wound like the original, was called the Caliber V-10. It was contained in a model called the Nautical, patterned on a watch of the same name from 1961. "The Nautical was uncommonly large for the '60s," Fleury says, "so its design didn't have to be altered. It was exactly right for contemporary tastes 40 years later." Within months, the company had brought out other alarm watches, including a pilots' model, the Aviator, and a GMT model.

A decade later, the models have multiplied. Along with the V-10, Vulcain has several other in-house movements, all of which are based on one construction. For example, there's a caliber with a modular automatic winding mechanism added to the basic movement. Hirschi is currently working on plans for Caliber V-16 with date display. She also draws sketches for other components of Vulcain's watches, such as dials with enamel paintings and hands. The designs are created in collaboration with an outside designer.

Old advertisements for the Nautical and the original Cricket

Hannes Keller,
the world's deepest diver, has designed
the most highly
perfected of all watches
for deep-sea diving

How do you make a watch a 100-metre diver? By adding a pressure chamber, of course, which protects the watch from the water. That is what Hannes Keller did when he designed the first ever watch to withstand the extreme pressures of the deep-sea decompression stages. It consists of a stainless steel case and a sapphire crystal, surrounding the dial. It is also completely watertight. The watch is hermetically sealed against the water. This new VULCAIN "Nautical" is the result of a long period of collaboration with world leaders in deep-sea diving, the Swiss diver, Professor Hannes Keller. Miss Yvonne Deneve, who is a member of the Swiss National Diving Team, is a unique watch, which is a diver's watch. It is a watch with a sense of the risks it is taking. - A watch which is the result of new and unique diving experiences. - 1966.

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VULCAIN

MANUFACTURE VULCAIN LA CHAUX-DE-FONDS SWITZERLAND

Yves Deneve, Swiss National Diving Team, with Hannes Keller, the author of the watch.

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PRESIDENT JOHNSON
APPEARED ON THE
COVER OF NEWSWEEK
WEARING A CRICKET.

One floor above the offices is the atelier, the realm of Wilfried Opalinski and his watchmaker colleagues. These artisans assemble movements, case them and finely adjust the rate of the finished watches. Five principal suppliers, all



The Nautical was first introduced in 1961. Relaunched in 2002, this watch houses Caliber V-10.

headquartered in Neuchâtel, provide the individual components. After one of Vulcain's watchmakers has completely assembled a movement, he or she installs the dial and the hands and then inserts the ensemble into the case. "We also assemble the watch straps here," Opalinski says. Quality control is also handled in house.

But new timepieces aren't the only ones that arrive in the workshops on the top floor of Vulcain's villa. "Scarcely a week goes by when we don't also receive historical timepieces that are being sent to us for restoration," says Opalinski.

"The volume of restoration work alone would justify hiring additional watchmakers," Fleury says. Vulcain does not now have room for them. Five work-



The Cricket Diver X-Treme in rose gold and titanium



Vulcain's Aviator GMT

tables, plus timing machines, equipment for testing water resistance, and component-storage space fill the atelier to the brim. It wasn't a coincidence that Vulcain opted to move to a villa with a large yard. A new wing will be built here in the future, Fleury says.

Vulcain sells somewhat fewer than 5,000 watches each year. These include the Nautical as well as models with cloisonné enamel dials and the Presidents' Watch.

Fleury has added a new name to his roster of presidential Cricket owners. In 2009, he sent Barack Obama a Cricket Anniversary Heart, which has an open-worked dial to display the movement. "When I got back from my vacation, I found an envelope on my desk," he recalls. "Inside it was a letter in which Obama personally thanked me for what he described as 'a wonderful present.'" O

Fleury in the Vulcain museum, where watches and documents recount Vulcain's history



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Pros

- + Lots of technology
- + Accurate anywhere on Earth
- + Good looks
- + Finding satellites is fun.

Cons

- Large size
- Has to "see" the sky
- Manual time zone and DST setting
- High price

OUT OF THIS WORLD

BY MIKE DISHER
PHOTOS BY ROBERT ATKINSON

Seiko's new Astron tells time by receiving GPS signals anywhere on Earth. Was it a world-beater in our test?





The last time Seiko called a new watch “Astron,” the future of timekeeping changed forever. Launched on Christmas Day, 1969, the original Astron was the world’s first commercially available quartz wristwatch. At the time, Seiko said of the Astron, “Someday, all watches will be made this way.” Today, it’s saying the same thing about the new Astron. Is Seiko right? Let’s find out.

If you have not read about it, the new Astron is an analog, solar-powered watch that receives GPS satellite signals and adjusts to the precise local time anywhere on Earth. It recognizes all 39 time zones, besting the top mechanical watches, which can display 37, with a manual reset. The Astron covers the globe by first determining its location using GPS, then comparing that information with an on-board database that divides the Earth’s surface into one million squares, each of which is assigned to a particular time zone. That is something no other watch can do.

The Astron differs from watches that receive terrestrial radio signals from atomic clocks. So-called RC (radio-controlled) watches receive signals when they are within range of stations in the United States, Japan, the United Kingdom, Germany and China, so they do not offer global coverage. The Astron works anywhere, even in the middle of an ocean or desert, in Antarctica, or on a Tibetan mountaintop. The Astron also automatically recognizes which time zone it’s in, while RC watches do not.

TO MAKE SURE IT’S ALWAYS ON TIME, THE ASTRON CAN ALSO RECEIVE LEAP-SECOND DATA.

The Astron also differs from Citizen’s limited-edition Satellite Wave, which receives GPS signals, but lacks a GPS geolocation function so it does not change time zones automatically.

Finally, though the Astron is a GPS receiver that knows precisely where it is, it can’t direct you to that new restaurant downtown, or tell you how far it is to the 14th green. It uses GPS solely to tell time.

WHEN YOU TAKE an Astron out of the box, it may have to be charged. The Astron is powered by light – any type of light will charge its battery, but sunlight is the most efficient energizer. The charging status is displayed via an “E - F” (Empty - Full) indicator between 9 and 10 o’clock. The power reserve when fully charged is two months in active mode and six months in sleep mode. In sleep mode, the Astron does not display the time until it “wakes up” by being exposed to light. It takes only six minutes of sunlight to provide enough power for the Astron to run for one day, but going from empty to fully charged requires 65 hours of sunlight. The GPS receiver will not operate when the watch is low on power, so regular charging is important.

The Astron performs two basic types of operations with GPS signals: it can automatically and manually sync to a single satellite to make sure its local time display is accurate, and it can be manually triggered to change time zones, which requires at least four satellite signals.

The Astron automatically attempts to sync with a single GPS signal once each day. The sync can be set in motion by exposure to the sun or another strong source of light. The Astron’s programming tells it that if a strong light source is present, there’s a good chance it can receive a signal. If the Astron acquires a signal, it remembers when that happened.



The Astron's ring-shaped GPS antenna sits beneath the ceramic bezel.

One satellite signal syncs the local time, while four are needed to change time zones.



On subsequent days, if the watch is covered by clothing or otherwise blocked from light, it searches for the signal at the same time as the last successful attempt, assuming the chances for reception are good. To make sure it's always on time, the Astron can also receive leap-second data. Leap seconds are added about every 18 months to account for the Earth's slowing rotation. The most recent was added on June 30 last year.

Manually syncing to a GPS signal is accomplished with a simple push of a button. Because GPS satellites carry atomic clocks, their time signals are incredibly accurate. (Seiko cites the figure of one second in 100,000 years.) Regular syncs keep the Astron right on time. While the Astron's sync functions allow it to keep time with great accuracy, the movement itself, without syncing, offers typical +/-15 seconds per month quartz performance. If you go an extended time without a sync, some error may creep into the display.

Changing time zones can only be accomplished manually, and it is a bit more complex. The process is initiated by pushing and holding a button for six seconds. Once the button is released, the Astron begins to search the sky for GPS

signals. In this mode, the seconds hand becomes an indicator that provides signal search status updates. The hand tallies each newly acquired signal by pointing to the corresponding hour marker, so for example after acquiring one, then two, then three satellite signals, the seconds hand points to 1, then 2, then 3 on the dial. When the search is complete, the seconds hand points to a small "Y" on the seconds track to indicate that the minimum four signals were acquired, or to "N" to indicate that the search was not successful. The small indicator between 10 and 11 o'clock also points to "4+" if the search was successful. If at least four signals were received, the hour and minute hands slowly march to their new positions to indicate the new local time.

If you prefer to set your watch to your destination time when you board the plane, the Astron can also be reset to a new time zone manually and placed in airplane mode to turn the GPS receiver off.

Adjusting for daylight saving time is another manual operation. The Astron knows its location, but it does not know the laws governing DST in all locations. A press of a button turns DST on and the DST setting is displayed on the indicator at 9 o'clock.

TO RECEIVE ANY SATELLITE signals, the Astron has to be able to "see" the sky. The owner's manual warns that outdoors, amid trees or tall buildings, receiving signals, and changing the time zone in particular, may be difficult. We tested the Astron in 12 outdoor locations to get a feel for how much sky has to be visible to pick up a signal. Our test locations included deep urban canyons in midtown Manhattan, an urban park, the center of a smaller city (White Plains, N.Y.), a small town main street (Tarrytown, N.Y.), and three rural settings, including a wooded trail.

PHYSICS GEEKS MIGHT RECOGNIZE A SLIGHT RESEMBLANCE TO THE CMS DETECTOR AT THE LARGE HADRON COLLIDER, NEAR GENEVA.

Given the warnings, the watch performed surprisingly well. We picked up a single satellite signal in the center of Times Square and on Madison Avenue surrounded by people and tall buildings. The only setting where we could not receive a signal was on a wooded trail beneath a dense canopy of trees, which is effectively the same as being indoors.

We also had better than expected luck changing time zones, which requires four signals. We achieved success amid skyscrapers on Madison Avenue at 53rd Street, though we had to walk around a bit, pointing the watch in different directions (attracting some glances from passers-by). We also acquired four signals in downtown White Plains surrounded by mid- and high-rise buildings, and in

two locations under a few trees on the main street in Tarrytown. As expected, the rural settings presented no challenges. We acquired the largest number of signals, eight, in a large park in a rural setting. We were unable to change time zones on the wooded trail, in the center of Times Square, and in front of the New York Public Library on Fifth Avenue.

Changing the time zone takes anywhere from 30 seconds to two minutes.

In an age of instant gratification, some may view this as an annoying delay, but we found that the process can be fun. The Astron is essentially a wrist-mounted satellite detector, and because GPS satellites are not geosynchronous – they orbit the Earth and so are always moving in the sky – you never know where they are, or how many are overhead. So, changing time zones is like searching for satellites overhead.

GPS, Relativity, and Einstein

Our GPS system uses 24 satellites, each orbiting the Earth at an altitude of about 12,400 miles and at a speed of about 8,700 miles per hour. Each satellite transmits a signal containing its location and the current, onboard time as determined by its atomic clock. A GPS receiver calculates its location (latitude, longitude and altitude) by comparing the signals it receives from a number of GPS satellites and triangulating on the position of each satellite. This process sounds relatively straightforward, until Albert Einstein gets involved. That's when it gets interesting.

In a famous experiment conducted in 1971, scientists demonstrated an effect of special relativity by loading cesium-beam atomic clocks on a Pan Am commercial jet and flying them around the world. When the plane landed, they compared the airborne clocks with identical clocks that never left the ground. As Einstein's theory predicted, less time had elapsed for the flying clocks, proving that the faster an object moves through space, the slower time passes for that object, relative to slower-moving objects.

Einstein also proposed the general theory of relativity, which holds that what we think of as gravity is actually a

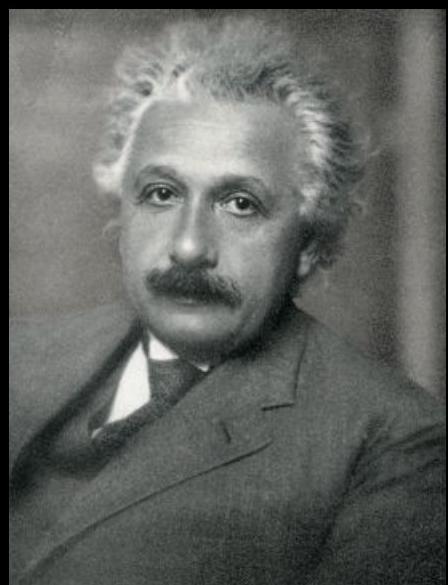
consequence of space-time curvature, and believe it or not, this too affects the rate at which clocks run. A clock located on top of a mountain will run faster than one on the ground. Indeed, Earth-based atomic clocks run at different rates depending on their altitude. That's general relativity in action.

So it comes as no surprise that GPS satellites provide an excellent opportunity to demonstrate how general and special relativity can affect everyday life. GPS satellites orbit at a high speed relative to the Earth's surface, so special relativity says their clocks will tick more slowly than their counterparts on the ground, by about seven microseconds (millionths of a second) each day. GPS satellites are also located far above the Earth's surface, so general relativity says their clocks will tick about 45 microseconds per day faster than those on the ground. The net effect is that the atomic clocks on board GPS satellites tick about 38 microseconds per day faster than those on the ground.

This difference sounds small, but it's not. In fact, it is so large that if GPS receivers did not account for the 38 microseconds, they would accumulate errors at the rate of about 10 km per day. In

less than two weeks, the error would be as great as the distance between New York and Philadelphia. So, the next time your GPS system delivers you to a new destination, say a quick thanks to that famous physicist with the wild white hair.

Albert Einstein's relativity theories let GPS devices guide you to your destination.



All of this technology requires a large housing, and the Astron's case measures a substantial 47 mm by 16.5 mm. Though it's on the large side, it is comfortable to wear. With curved lugs and a shaped strap, our test watch hugged the wrist. The holes in the strap are closely arranged to allow a good range of adjustability. Our test watch was also fairly light at 146 grams. However, the thick case and strap combine to create a bulky package, making it a tight fit under some cuffs. On my 7 3/4-inch wrist, a standard Nordstrom dress shirt cuff would not button over the watch, and with other shirts, pulling the cuff back to check the time sometimes proved a challenge.

Seiko says that the silicon strap has been specially treated, and it does have a silky smooth feel. The strong vanilla scent associated with some straps is also pleasantly absent. However, when it

comes to strap colors, Seiko offers the famous Ford Model T option – you can have any color you like, as long as it's black.

The keeper on the strap is a substantial metal piece with a nice brushed finish and the Seiko name engraved. The single-folding deployant buckle is easy to adjust and to open and close. It's well polished and instills confidence. The buckle is nicely curved and, like the case, hugs the wrist.

When it comes to aesthetics, the Astron's look is appropriately space-age. Physics geeks might recognize a slight resemblance to the CMS detector at the Large Hadron Collider, near Geneva. The shaped hour markers float above a deeply three-dimensional display. Steeply stepped rings lead down to the dial. This arrangement is visually dramatic, though it causes the hands, and the seconds hand

in particular, to be a bit too short. In a watch designed to offer ultimate accuracy, the seconds hand should not fall a few millimeters short of the seconds track. We also noticed that while the blue seconds hand on our test watch coordinated with the color of the hour markers, it offered less contrast than a white hand would provide. In some cases design trumps practicality.

The translucent dial has a sunburst finish, which is appropriate given the Astron's solar charging capability. The second time zone (or home time) is displayed in 24-hour fashion on a subdial at 6 o'clock. The date and second time zone are easy to read, though more could be done to differentiate the small hands on the second-time-zone display. Silver-colored beveled edges on raised dial indications show attention to detail.

THE ASTRON'S DIAL layout is fairly standard until you reach the curving, multi-function indicator located between 9 and 11 o'clock. A single small hand indicates the state of the charge, whether the watch is in airplane mode, whether daylight saving time is indicated, and, during a time-zone reset, whether the required four satellite signals were acquired. The flat sapphire crystal is treated with Seiko's "Superclear" coating, which the brand says reduces light reflections by 99 percent. It lived up to its name during our test.

On our test watch, the blue Lumibrite on the hour markers was lumpy and irregular. Other Astrons we've seen exhibit the same flaw. Though it's visible only on close inspection, for some owners, close inspection is a daily ritual, and once the eye finds a flaw, it becomes hard to ignore. The Lumibrite at the tips of the hour and minutes hands was smooth. The seconds hand has no luminous material.

According to Seiko, Lumibrite charges fast and lasts long. In our test, we exposed the Lumibrite to direct sunlight for 30 minutes to see how long it would last on a full charge. After its tanning session, the Astron was sealed away from the light. We checked it hourly for the





The silicone strap is comfortable, and the deployant buckle hugs the wrist.

SPECS

SEIKO ASTRON

Manufacturer: Seiko Watch Corp., 8-10 Toranomon 2-Chome, Minato-ku, Tokyo 105-8467, Japan

Reference number: SAST009

Functions: Hours, minutes, central seconds, date, perpetual calendar, second time zone, GPS-controlled world time with 39 time zones

Movement: Caliber 7X52, solar charging

Case: Stainless steel with ceramic bezel, flat sapphire crystal with nonreflective treatment, fully threaded stainless-steel caseback, screw-down crown, water resistant to 100 meters

Strap and clasp: Silicone strap with stainless-steel folding clasp

Dimensions: Diameter = 47 mm, height = 16.5 mm, weight = 146 grams

Variations: With black dial, titanium case and bracelet with black hard coating, limited edition of 2,500 pieces (ref. SAST001, \$3,850); with black dial, titanium case and bracelet (ref. SAST003, \$3,100); with black dial, titanium case and bracelet with black hard coating (ref. SAST007, \$3,200)

Price: \$2,300

first 12 hours. After that much sun, many watches would light up like a fireworks display. The Astron did not. But what it lacked in lumens, it made up for in stamina. Indeed, the Lumibrite lasted a full 18 hours.

During the first three hours of our test, the time could be read easily in the dark. The glow was sufficient, but not impressive. After three hours, reading the time required allowing our eyes to adjust to the darkness for a minute or two. That was due to reduced luminous output, and the fact that the small amount of luminous material on the tips of the hands makes them difficult to distinguish without a close look. After 18 hours in the dark, the Astron could still be read, though just barely.

Our test watch had a stainless-steel case with a polished finish interrupted only by a satin finish applied on top of the lugs. All Astron models have ceramic bezels because the material improves signal reception compared with steel. The solid caseback screws in, and the inscription on the caseback indicates 10-bar, or 100-meter, water resistance.

The screw-down crown has a softly knurled finish that looks nice but does not aid the grasp. In fact, we found the crown to be a bit slippery. Fortunately, the Astron's crown is not used very often.

Because the Astron offers lots of functionality, it comes with multiple sets of instructions. An accordion-like seven-page quick-start guide covers the basics. For more information, there's a thicker, printed owner's manual. To get the full story, load the included CD, sit back, and enjoy the 57-page unabridged Complete User Guide.

The Astron comes in several flavors, and beyond the aesthetic variations, there's one difference some may want to note. On our test watch, the "city ring" did not actually identify any cities. Rather, it simply offered numbers indicating offsets from GMT. Other Astron models take the more traditional (and informative) approach and identify major cities along with the time-zone offsets.

At the end of the day, the Astron is likely to polarize enthusiasts. Some will think the GPS "middle of nowhere" functionality is cool, and others won't. Some may consider it a gimmick, or a gadget watch, and to those, the price, \$2,300, will be too steep. If you appreciate the engineering know-how required to create an ultra-low-energy GPS receiver for the wrist, or if you want to own the first global GPS time-zone watch, or if you just want to be able to count the GPS satellites overhead, the Astron may be an appealing package.

So, will all watches be made this way some day? The short answer is no. To reach a point where many watches are made this way, Seiko will have to make the package much smaller and much less expensive. The odds favoring universal adoption are certainly longer than they were in 1969. ○



Scan here to get wallpaper images of the Seiko Astron.
[http://www.watchtime.com/
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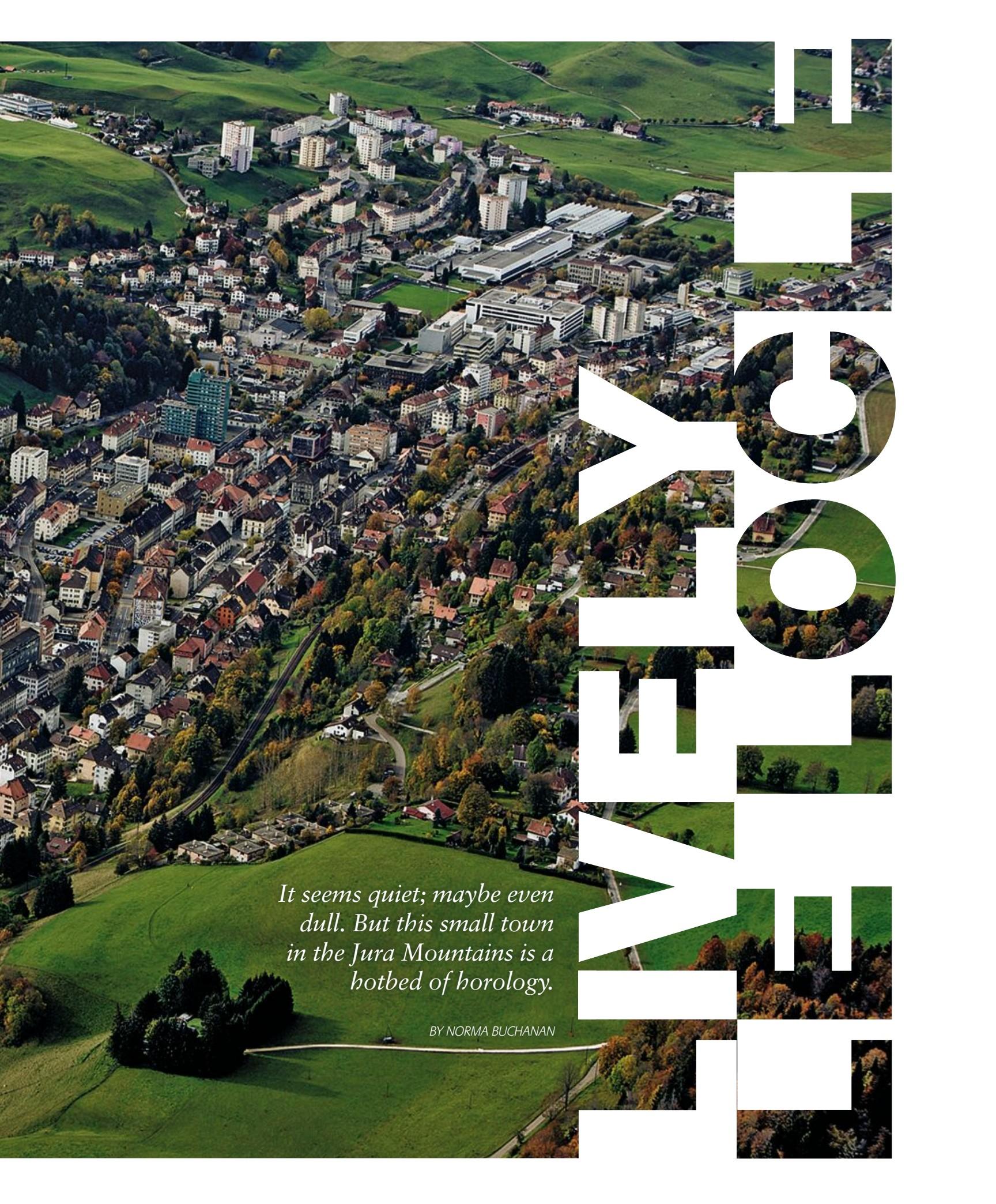
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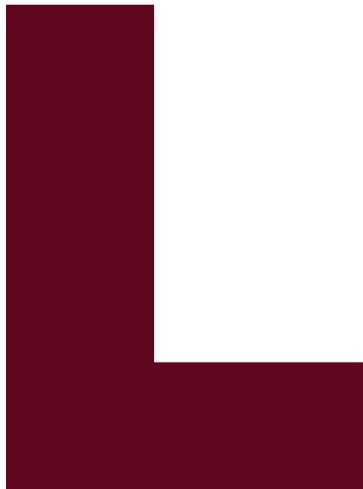


© BOVOUT A LA GUILLAUME



It seems quiet; maybe even dull. But this small town in the Jura Mountains is a hotbed of horology.

BY NORMA BUCHANAN



A statue of Le Locle's favorite son, Daniel JeanRichard, considered the father of the Jura watchmaking industry

e Locle, a town of about 10,000 in Switzerland's Jura Mountains, isn't most people's idea of a great place to visit. There are no medieval castles, chic boutiques, Gothic cathedrals, noteworthy restaurants or world-class art museums. In fact, Le Locle is, even to many Swiss, more a punchline than a real place: the quintessence of the humdrum.

But not to those who love watches. The town, less than two miles from the French border, in the canton of Neuchâtel, is sometimes called the cradle of the Jura watch industry: it was here that Daniel JeanRichard, the Jura industry's founding father, set up shop in the early 1700s. The watch industry came to dominate the town in the 19th century, employing, at certain points, more than half of the town's working population. Today, Le Locle is home to scores of companies that either make watches – Tissot, Zenith, Ulysse Nardin, Christophe Claret, Vulcain, Cyma and many others – or supply companies that do. The latter include components and movement makers, such as Nivarox and Audemars Piguet Renaud et Papi; tool makers, like Bergeon; finishers; design firms; and the like. Rolex has a facility here where it assembles some of its ladies'-watch movements. One of COSC's three testing facilities is here. The town's crowning glory, from a watch fan's point of view, is a watch museum housed in an elegant mansion called the Château des Monts.

A mural on the front of the Le Locle town hall testifies to the importance that the watch and clock industry has long had in the town. Painted in 1922, it shows two men, one of them holding a compass, dividing the day, symbolized by the sun, into hours. The legend reads, "Hommes ont divisé le cours du soleil déterminé les heures." ("Men have divided the course of the sun and determined the hours.")

THE TOWN HAS ONE landmark that most watch aficionados have seen pictured at one time or another. It's a statue of a young Daniel JeanRichard examining a watch, a watchmaker's apron wrapped around his waist.

Born in 1672 in the nearby hamlet of Bressels, between Le Locle and the village of La Sagne, JeanRichard is credited with bringing to the Swiss Jura not just technical watchmaking



The Le Locle Watchmaking Museum is in an 18th-century mansion called the Château des Monts.

know-how, but a new system of manufacturing based on a division of labor. According to that system, known as *établissage*, different companies or individual craftsmen specialized in making particular components, which they sold to the *établisseeur*, who assembled them into movements or complete watches.

There is a legend about JeanRichard that every Loclois has heard. It is based on an account written about 80 years after the fact, in 1766, by Samuel-Frédéric Osterwald, who included it in a book he wrote about the region of Neuchâtel. The story goes

The building that once housed Daniel JeanRichard's workshop

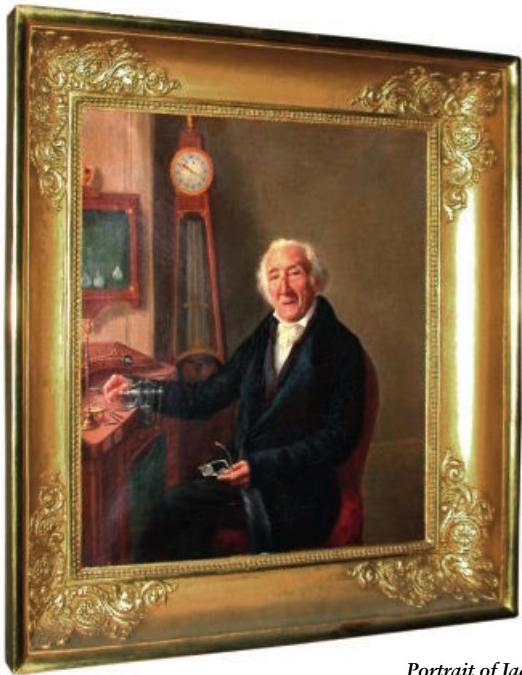


that a horse trader, returning from abroad, came to the house of JeanRichard's father and showed him a watch made in London that no longer worked. While at the house, the merchant noticed some small pieces of metalwork by young Daniel, who had trained as a goldsmith. Based on the skill they demonstrated, the merchant decided to leave the watch with Daniel to be repaired. Daniel not only fixed the broken watch, he decided to make a duplicate of it, which required starting from scratch: inventing and constructing tools to make the components, and then making the watch itself. He completed the watch in less than 18 months, with no assistance from anyone except for some information he gleaned during a visit to Geneva. There he learned, with some difficulty given the Genevans' reluctance to part with trade secrets, how to measure and cut the movement's wheels.

No one knows how much of this story is true. What is certain is that he set up a watch workshop in Le Locle and made watches using, first, parts he bought from craftsmen in Geneva and perhaps elsewhere (i.e., via *établissage*) and, later, parts that he made himself. He trained apprentices, including his five sons, who in turn taught watchmaking to their apprentices. And, perhaps most importantly, he made watchmaking tools, sold them, and taught others in the Jura to make them.

Le Locle in JeanRichard's time, around 1700





Portrait of Jacques-Frédéric Houriet, on display at the Watchmaking Museum

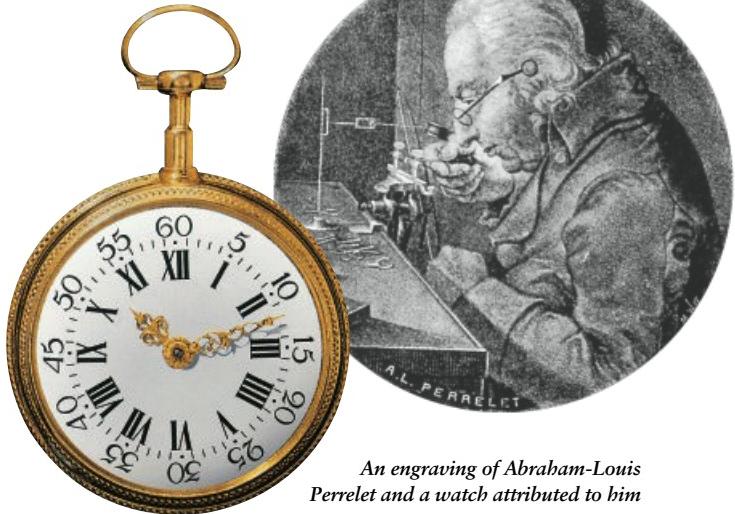
The JeanRichard statue, completed in 1888, was by the Swiss academic sculptor Charles Iguel, and sits in front of what was once Le Locle's watchmaking school on Rue Daniel-Jeanrichard near the center of town (the school has since merged with another and moved to new premises).

The farmhouse where JeanRichard worked from 1705 until his death still stands at 27, Chemin de Joliment, with a plaque identifying it.

To see one of JeanRichard's watches, go to the watch museum in Château des Monts, very near the farmhouse. There you will find a chunky (57 mm by 33 mm), steel and brass watch, which, like other watches of its time, has just an hour hand. The movement has a fusée and a verge escapement. The back plate is engraved in cursive letters, "Daniel Jeanrichard au Locle, fait pour Marchand à Genève."

The Château des Monts would be worth seeing even if it had no watches in it. Built in the late 18th century in the Louis XVI style, it is surrounded by beautiful English gardens and perched on a hill overlooking the town. With its ornate, period decor and overall look of *ancien régime* luxury, it is a perfect foil to the very modern, and much larger, watch museum a few miles away in La Chaux-de-Fonds, Le Locle's watchmaking sister town. (Together, the two towns have been granted World Heritage Site status by UNESCO because of their watchmaking history.)

The building itself has a long watchmaking pedigree. It was built by Samuel DuBois, an army officer, assayer and watchmaker, and passed down to his son and grandson (the latter, Frédéric DuBois, was also a watchmaker). The founder of the watch brand Doxa (now headquartered in Bienna), Georges Ducommun, bought the house in 1912. In 1954, his daughter sold it to the town of Le Locle and it became a museum.

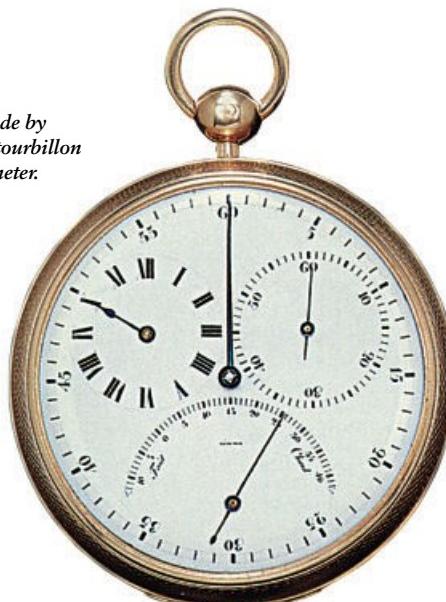


An engraving of Abraham-Louis Perrelet and a watch attributed to him

BY THE TIME JEANRICHARD died, in 1741, the valleys of Le Locle and La Chaux-de-Fonds, which seem to have had no watchmakers at all before JeanRichard, had hundreds of them. The census of 1750 shows that the town of Le Locle alone had 41 watchmakers, 15 casemakers and goldsmiths, and 25 others working in related fields. By 1800, there were 850 watchmakers in Le Locle.

The most famous of these was Abraham-Louis Perrelet (1729-1826), who spent his entire, long career in Le Locle. Watch cognoscenti know him as the inventor of the automatic winding system used in watches today. He actually invented two similar self-winding systems, one incorporating a weight that swung back and forth between two banking pins, and another, the one now in use, in which a semi-circular weight rotates through a complete circle. He is believed to have made his first automatic watch around 1770. Perrelet sold his automatic movements to other prominent watchmakers, including Abraham-Louis Breguet and Louis Recordon. (Breguet himself spent about six months in Le Locle, at the end of 1794 and beginning of 1795, while he was in exile from Paris during the aftermath of the French Revolution. He liked the town very much, judging by a letter written to him in Le Locle by a friend. "I am so glad you have found pleasant refuge," the friend, an ébauche maker, wrote.)

This watch made by Houriet has a tourbillon and a thermometer.





The upper story of the town hall with its mural depicting men dividing the day into hours

In his day, Perrelet was also known throughout Canton Neuchâtel for his work on cylinder escapements and complicated watches. Osterwald wrote that for many years Perrelet was “the master of all watchmakers of Le Locle.” In old age (he died at 97), he was known as “l’Ancien du Locle” (translated, roughly, as “the dean of Le Locle”).

The town named a short street, Crêt Perrelet, near the train station, after him. There is a watch, unsigned but attributed to him, and a room named after him, in the Château des Monts. Other than these, there is little in Le Locle to remember him by.

Not so one of his apprentices, and another of the town’s horological heroes, Jacques-Frédéric Houriet (1743-1830), whose house, or mansion, rather, is at number 28 on Rue du Crêt-Vaillant. Completed in 1786, the house is considered one of the most impressive in the Jura, thanks in part to its front terrace, which is flanked by imposing staircases.

Houriet was born in La Chaux-d’Abel, in what is now Canton Jura. After studying watchmaking with Perrelet, he left for Paris at age 16, and there became a student of Julien Le Roy, watchmaker to the French king, Louis XV. In Paris, he befriended the great watchmakers Ferdinand Berthoud and Breguet

(both were from Canton Neuchâtel). Nine years later he returned to Le Locle and established himself as an expert in precision watchmaking. As soon as he got there, he installed Le Locle’s first transit instrument, used to make celestial observations. He set up a workshop with his brother-in-law, David Courvoisier, and over the next 40 years went into business with various other family members. He experimented with balance springs and invented tools for making them. He devised a spherical balance spring. In 1818, he was admitted to the prestigious Academy of Sciences in Paris.

**A MURAL ON THE FRONT OF
THE TOWN HALL TESTIFIES TO
THE IMPORTANCE THAT THE
WATCH- AND CLOCKMAKING
INDUSTRY HAS LONG HAD HERE.**



The Maison DuBois, now a bed and breakfast, once housed one of the first watch wholesalers in the Jura Mountains.

Houriet lives on, after a fashion, in the Château des Monts. On the museum's second floor there is a re-creation of Houriet's workshop inhabited by a life-sized, talking Houriet automaton. Next to him is an actual Houriet clock, a standing astronomical regulator he made in about 1768 as his "masterpiece" – a work produced as the culmination of an apprenticeship – at the end of his stay in Paris.

One of Houriet's contemporaries, and customers, was a watch wholesaler and manufacturer named Philippe DuBois. DuBois started out as a fabric exporter, but branched out into watches in 1743 and came to specialize in self-winding watches, at least some of which he bought from Perrelet. Ultimately, he not only bought and sold watches, but hired watchmakers, including some of Daniel JeanRichard's sons, to make them.

His company was housed in a mansion built in 1684 that still stands at Grande-Rue 22. It is now a bed and breakfast with five guest rooms and, on the ground floor, a cafe. The upper floors have been fitted with antique watchmakers' benches and other artifacts so that customers can get a sense of what the watchmaking life was once like in Le Locle. There are also antique watches and some of the company's ledger books on display. The year shown on the outside of the building, 1785, is when the company began selling its own watches. The DuBois watch-wholesaling company was actually founded in 1751, making it one of the first watch agencies in the Jura Mountains.

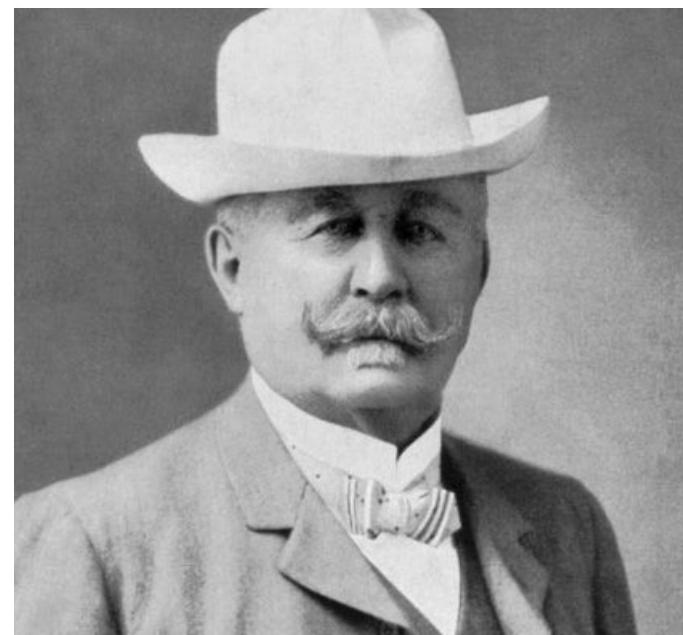


The house that Le Corbusier designed for Zenith founder Georges Favre-Jacot

THE 19TH CENTURY WAS Le Locle's golden age: the watch-making industry exploded there, as it did throughout the Jura. By 1848, the year of the revolution that made the Canton Neuchâtel a republic (the revolution started in Le Locle) the town had 3,052 watchmakers, who made up 42 percent of Le Locle's population.

A sign of how important watchmaking was becoming in Canton Neuchâtel as the century wore on: the local industry became alarmed about its dependence on outsiders for that most crucial of components, the balance spring. In 1833 the Patriotic Emulation Society of Neuchâtel, an organization whose goal was to advance the canton's overall well-being, offered a prize for "the artist who will succeed in making in this country [i.e., the Neuchâtel area] balance springs for watches." The mayor of Le Locle was one of the judges (the watchmaker Jules Jürgensen was another; more on him later), and the prize was awarded to a Le Locle watchmaker/inventor, Olivier Quartier. No one now knows to what, if any, use he put his spring-making skills after he won the prize. He won another prize from the Emulation Society for inventing a machine for cutting gear wheels. These honors earned him a place at the table of Le Locle watch heroes.

Favre-Jacot was Le Locle's most prominent watch baron in the late 19th and early 20th centuries.





The Tissot factory as it looked in 1929

But the century's biggest watch hero by far was Georges Favre-Jacot, a watchmaker born in nearby Les Ponts-de-Martel. In 1865, in a workshop on Rue des Billodes, he founded what would become known as Zenith (now owned by the luxury-goods giant LVMH, and located on the same street). It started out as a small ébauche factory, but after just 10 years it employed, according to Zenith, one-third of Le Locle's work force. Soon after that, Favre-Jacot adopted the mass-production techniques being used by the American watch industry. Swiss companies learned of these techniques, with which the Americans were producing very high-quality yet inexpensive watches, at the International Exposition in Philadelphia in 1876. Favre-Jacot was one of the very first entrepreneurs in Canton Neuchâtel to convert to what became known as "the American system of manufacture."

His company grew by leaps and bounds, and as it did, Favre-Jacot added ever more wings to his factory, turning it into the sprawling complex it is today. He even bought a quarry and a brick factory so that he would have an assured supply of building materials.

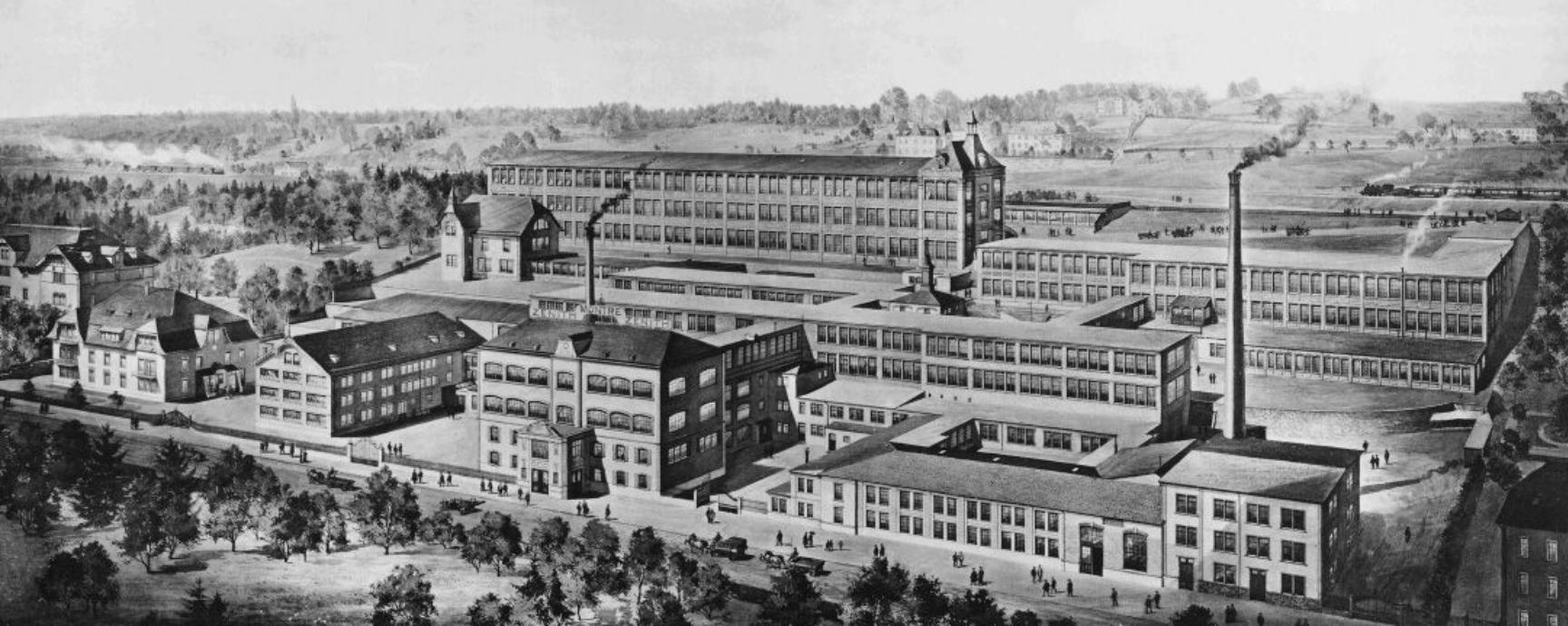
In 1905, a survey of Swiss businesses showed that Favre-Jacot's company (it took on the name "Zenith" six years later) had 574 employees. It was one of just two watch factories in Canton Neuchâtel that employed more than 500 (the other was Fontainemelon, a movement maker in the town of the same name, which in 1905 had 558 workers).

Between 1902 and 1907, Favre-Jacot also built to the southwest of the factory a group of nine apartments, contained in two-story buildings, for some of his workers. The buildings, still standing, are known as Quartier La Mollière.

His own house, which has also survived, is far grander. When he retired at the age of 67, he commissioned the soon-to-be-world-famous architect Charles-Édouard Jeanneret (better

**THE TOWN IS SOMETIMES
CALLED THE CRADLE OF THE
JURA WATCH INDUSTRY.**

After its founding in 1865, Zenith quickly became the largest watch company in Le Locle.



known as Le Corbusier) to design for him a villa at Côte des Billodes 6. (Le Corbusier was born in La Chaux-de-Fonds, and designed several buildings there, the best known of which is the Villa Turque, owned by the Ebel watch company.) The house was completed in 1912. From it, Favre-Jacot could look out over the company he'd spent his life building. When he died, in 1917, his ashes were placed in one of the factory's walls. A plaque now marks the spot where they're interred.

What is now Le Locle's biggest watch brand by far, Tissot, was founded a few years before Zenith. Charles-Félicien Tissot and his son Charles-Émile started the company in 1853. Their house and original workshop, at Crêt-Vaillant 23, has survived. Today, Tissot is owned by the Swatch Group. Since 1911 it has been located at Chemin des Tourelles 17. Tissot is also one of Switzerland's biggest brands: about one in six watches exported from Switzerland is a Tissot. The company sold about 4 million watches last year.

DURING THE 19TH CENTURY Le Locle also became a center of precision chronometry. Its proponents included Ulysse Nardin, whose name lives on in Ulysse Nardin SA, headquartered at 3, Rue du Jardin. Nardin (1823-1876), who had been an apprentice of Frédéric William DuBois, set up a workshop that specialized in high-precision pocketwatches. To help rate his watches, he bought an astronomical regulator that Houriet had made nearly a century earlier (the one now on display next

The Angélus watch company closed its doors during the quartz crisis.



The Ulysse Nardin building, on the Rue du Jardin

to the Houriet automaton in the Château des Monts museum). Under Nardin's son, Paul-David Nardin, the company began to concentrate on making marine chronometers and became famous for them. Today the company still calls on its marine-chronometer history in marketing its watches.

Henri Grandjean (1803-1879) was another of Le Locle's chronometry superstars. In 1851, two of his marine chronometers won medals in the International Exhibition in London. It was thanks to his advocacy that the Neuchâtel Observatory was founded in 1858 (he sent many of his own chronometers there for testing), and that the Le Locle Watchmaking School came into being in 1868. Grandjean was also a politician: he took part in the revolution of 1848 and served on Neuchâtel's Grand Council. He also founded the organization that built Le Locle's Quartier Neuf (New Quarter), still standing in the northeast section of the town. It consists of five rows of tidy-looking hous-

The Zenith building today





Tissot has been in Le Locle since the company was founded in 1853.

es built in 1855 to provide industrial workers with affordable and sanitary housing.

The Jürgensen family also specialized in chronometers. A young watchmaker named Urban Jürgensen, born in Denmark, moved to Le Locle at the end of the 18th century to refine his skills under Houriet's direction. He did so, and after studying in Paris with Breguet and Ferdinand Berthoud, he split his time between Le Locle and Copenhagen. He was appointed royal watchmaker by the Danish king, Frederick VI, and made chronometers for the Danish Navy. In 1805, he married Houriet's daughter, Sophie-Henriette. Their son, Jules-Frédéric, born in Le Locle in 1808, carried on his father's work in precision chronometry. The Jürgensens were friends with Hans Christian Andersen, who made an extended visit to Le Locle in 1833 and stayed in Houriet's house (Houriet had died three years earlier).

The Montblanc watch division is housed in a recently renovated castle-like villa.



Few traces of the Jürgensens remain in Le Locle, but in the village of Les Brenets, next to Le Locle, there is one Jürgensen memento. It's a tower called Tour Jürgensen, built sometime before 1880, and there's a romantic legend surrounding it. Supposedly, Jules Jürgensen's son, Jules Frédéric Urban Jürgensen, built the tower so that he could gaze down from its top and catch an occasional glimpse of the woman he loved, who lived across the border in France, on the other side of the Doubs River. He requested that when he died, his heart be placed in an urn in the tower. This urn, the legend goes, was discovered in the 1970s by hikers in the woods surrounding the tower. It had been cast out of the tower by vandals long before. There's another, more mundane, theory about why the Jürgensens built the tower: it was so that they could make astronomical observations and thus regulate their watches and clocks.

THE 20TH CENTURY BROUGHT an end to Le Locle's salad days. The industry was battered by world financial crises and many companies shut down. Unlike La Chaux-de-Fonds, which benefitted mightily from the immigration of Jewish entrepreneurs in the late 19th century, many from Alsace, Le Locle did not. There were no families comparable to the Schwobs, Ditesheims, or Blums, which gave La Chaux-de-Fonds some of its biggest watch companies and its greatest wealth.

**TISSOT IS LE LOCLE'S
BIGGEST WATCH
PRODUCER BY FAR.**



Nivarox occupies
an inconspicuous
building on Avenue
du Collège.

The town's watch industry carried on – Zenith and Tissot survived and at times prospered – and a few luminaries continued to make important innovations. Jämes Pellaton made tourbillon watches, including the smallest tourbillon watch made to date (on display in the Château des Monts). His former workshop is at 20, Rue du Marais. (He himself has a street named after him. AP Renaud et Papi, known for its own tourbillons, is located on Rue Jämes Pellaton.) Pellaton's pupil, Fritz Robert-Charrue, whose old workshop is at Chemin des Tourelles 13, made an even smaller tourbillon in 1945.

The quartz crisis of the 1970s and 1980s brought down many watch companies in Le Locle, as it did all over Switzerland. There are still remnants of some of these defunct companies visible in the town: among them is the weather-worn sign on the side of the former Angélus watch factory on Rue Alexis-Marie-Piaget.

Audemars Piguet Renaud et Papi, which moved to Le Locle 23 years ago

**NIVAROX IS LE LOCLE'S
MOST IMPORTANT COMPANY.
THE VERY EXISTENCE OF
THE MECHANICAL-WATCH
INDUSTRY DEPENDS ON IT.**





Watchmaker Christophe Claret and his company's factory/headquarters, housed in a building once owned by the Jürgensen family

THE MECHANICAL RENAISSANCE BROUGHT NEW BLOOD TO LE LOCLE.

But now the mechanical renaissance has brought new blood to Le Locle. The high-end movement maker Renaud et Papi moved here from the Vallée de Joux in 1990 (Audemars Piguet acquired it two years later). The Vulcain brand has been revived and for the past decade has been headquartered in a lovely villa on Chemin des Tourelles (see “In Villa Vulcain” in this issue). Christophe Claret moved to Le Locle from La Chaux-de-Fonds in 1998 and now occupies an impressive mansion once owned by the Jürgensen family. Montblanc’s watch division has its headquarters in yet another splendid former residence, an art nouveau, castle-like building near Vulcain on the Chemin des Tourelles.

The most important company in modern-day Le Locle, grown to Atlas-like strength because of the mechanical-watch revival, has no fancy mansion. On the Avenue du Collège there’s a large, drab-looking facility that seems to have been designed to be overlooked. The building is that of Nivarox-FAR, upon which most of the mechanical-watch industry depends for its very existence.

Nivarox, which is owned by the Swatch Group, makes the vast majority of the hairsprings used in mechanical watches. (This could change in the coming years: the Swatch Group is seeking clearance from Switzerland’s anti-monopoly commission, COMCO, to curtail hairspring deliveries to companies to which it does not want to sell.) Without Nivarox, the Swiss mechanical-watch industry would grind to a halt. Humdrum, maybe. But like Le Locle itself, more important than it looks. ○



Scan here for our feature on La Chaux-de-Fonds, Le Locle’s sister city and another watchmaking hub.
<http://www.watchtime.com/?p=27015>





Pros

- + Patented chronograph module
- + Attractive design
- + Good nighttime legibility

Cons

- Poor daytime legibility
- Screw-down locks for chronograph pushers are hard to use.

P COUNTER IN

The Chrono 4 Geant Titan's most noteworthy feature is the layout of its chronograph counters. How well do they, and it, work?

N
T

BY MARTINA RICHTER

PHOTOS BY ZUCKERFABRIK FOTODESIGN



The highly luminous dial is easy to read at night.

The number “4” in the name of this watch refers to the unusual arrangement of its four subdials. On most chronographs, subdials are placed at 3, 6 and 9 o’clock (or 6, 9 and 12) – so a horizontal row of four of them right below the midline of the dial is both unusual and eye-catching. Eberhard & Co. devised this singular display based on the ETA 2894 caliber and had it patented more than 10 years ago. It was the only one of its type at the time and has since become an Eberhard & Co. trademark.

This version of the Chrono 4, which has a titanium case, was launched in 2011 in honor of the Chrono 4’s 10th an-

niversary. It was manufactured in a limited edition of 1,887 pieces, a nod to the founding year of Eberhard & Co.

The case of the Geant measures an impressive 46 mm across (in contrast to the 40-mm diameter of the basic Chrono 4 model) and is 14 mm thick. Rather than traditional chronograph pushers, the watch has cylindrical ones with screw-down elements. The crown, which is 8 mm in diameter and flanked by crown guards, also screws into the case. The crown screws in and out smoothly and easily but the chrono pushers don’t. They are difficult to grasp and turn. If the wearer wishes to use the chronograph

function often he would do well to leave the pushers unscrewed – doing so doesn’t detract from the watch’s appearance. But he must be sure to screw the pushers and the crown into the case before exposing the watch to water. If he does so, the watch will be water resistant to 200 meters, a level adequate for diving. The case-back, which is solid and held in place with eight screws, keeps the case tight as a drum.

The watch has a unidirectional bezel that ratchets in half-minute increments. The bezel has a standard minutes track and a very prominent triangle at the top. The dial has a generous amount of lumi-



SPECS

CHRONO 4 GEANT TITAN

Manufacturer: Astor Time Ltd., Vicoletta 2, 6900 Lugano, Switzerland

Reference number: 37060

Functions: Hours, minutes, small seconds; date, chronograph with 30-minute and 12-hour counters; 24-hour display; tachymeter scale

Movement: EB 251 automatic chronograph based on an ETA 2894; chronograph module patented by Eberhard; 28,800 vph; 53 jewels; Incabloc shock protection; flat Nivarox hairspring; 47-hour power reserve; diameter = 28.0 mm; height = 6.10 mm; perlage and satin finishes

Case: Titanium; sapphire crystal with nonreflective coating; solid caseback; water resistant to 200 meters

Strap and clasp: Rubber strap with pronged titanium buckle

Rate test:

(Deviations in seconds per 24 hours, when fully wound/after 24 hours)

Dial up	+8.5 / +7.2
Dial down	+9.1 / +8.0
Crown up	+5.9 / +5.0
Crown down	+4.5 / +4.7
Crown left	+10.2 / +9.9
Greatest deviation of rate	5.7 / 5.2
Average deviation	+7.6 / +7.0
Average amplitude:	
Flat positions	337° / 280°
Hanging positions	292° / 252°

Dimensions: Diameter = 46 mm, height = 14.1 mm

Price: \$10,600 (\$11,530 with titanium bracelet)

nous material, which makes the watch very easy to read at night – sometimes, in fact, easier than during the day.

The dial is beautifully designed. The applied metal disk toward the center of the dial is decorated with Geneva stripes and the four subdials have a fine guilloché finish, as does the dial's outermost section. The screws that attach the applied metal disk to the dial have a PVD finish. (Similar screws appear on the bezel, crown guard and lugs.)

But the dial does have its drawbacks. Despite the applied luminous markers (which appear white under bright conditions) and the sword-shaped skeletonized

steel hands, the time is sometimes unreadable even with the anti-glare sapphire crystal. Perhaps this is due to the many reflective surfaces on the anthracite ring, secured with six black screws. The brand logo is inscribed in red near the “6” and a date aperture is located at “12.” Unfortunately, the magnifier above the date does not help with legibility because the chronograph seconds hand blocks the date when the hand is at rest at the 12 o'clock position, as it nearly always is.

Starting the chronograph requires a bit of force. The first time you push the chrono button you might think the

The crown screws in smoothly but the pushers can be difficult to grasp and turn.



The dial is beautifully designed with Geneva stripes and guilloche decorations.

steep angle of the inner flange at the outer edge of the dial also restricts legibility.

And what's true for the large red hand also applies to the four small hands on the horizontal line of subdials. The small seconds hand located on the far right can be used to verify that the watch is running. It is visible in the dark due to a small bit of luminous matter on its tip. But reading the seconds precisely might require the assistance of a loupe or other magnifier. The other three subdials, from left to right, the 30-minute and 12-hour counters and the 24-hour display, can also be hard to read with the unaided eye. Anyone who puts a great premium on functionality would be better off with the classic Chrono 4 or Grande Taille model (a 43-mm version of the Chrono 4) with a black dial, white counters and white tachymeter track. These models have considerably better legibility than the Geant Titan, but they don't have the charm of being a limited edition.

The watch's rate results, as shown by our timing machine, were so-so. When

fully wound the watch gained 7.6 seconds per day. With the chronograph switched on, it gained 6.6 seconds per day. After running for a full day, the watch gained 7.0 seconds. On the wrist, the watch showed a slightly better rate, at +5.8 seconds.

The watch has a sculpted rubber strap, held by curved lugs in a specially designed recess in the mid-section of the case. The strap has a pronged buckle made of polished titanium. The watch is also available with a titanium bracelet. ○

screw-lock hasn't been released properly, but later you'll get used to the stiffness and see it as a sign of security. The pusher at 4 o'clock, used to reset the chronograph to zero, operates more smoothly. Unfortunately, the thin, red chrono seconds hand, although adequate in length, is difficult to locate above the dark gray dial. The seconds track is delicately executed. The four markers between each seconds marker do not correspond to the four-hertz rhythm of the balance – an oversight that is hard to excuse for an established chronograph specialist like Eberhard. And we spotted the tachymeter scale only after a second look. The overly



Scan here to read about another watch from the Eberhard collection.
[http://www.watchtime.com/
?p=27012](http://www.watchtime.com/?p=27012)



M

Mainsprings perform herculean tasks. With a maximum thickness of just 75/1,000 mm, they develop strong torque, which they keep almost constant. A mainspring's torque is directly proportional to its width. Doubling a mainspring's thickness increases its torque approximately eight times. Its length also influences the movement's running autonomy: each millimeter added to a mainspring's length extends the movement's running time but simultaneously causes a linear decrease in its torque. Building movements that ensure uniformly strong driving torque and long running time poses a special challenge for watchmakers.

Mainsprings must satisfy diverse requirements. They must not become weakened, bend out of shape, kink or (heaven forbid) break. They should also resist corrosion and magnetism. Around 1965, the carbon steel used to make mainsprings began

to be replaced with cold-rolled alloys that were less vulnerable to friction and wear. Mainsprings made with these alloys rarely suffer any of the problems listed above.

Nivaflex is the alloy most frequently used for mainsprings in high-quality watches today. Nivaflex mainsprings are antimagnetic and have an extremely high tensile strength of up to 3,000 megapascals (equivalent to 300,000 meters). They attain values of 800 or greater on the Vickers hardness scale. (For comparison, 316L stainless steel ranges between 200 and 240 Vickers in hardness.) They are highly resistant to reverse bending, retain good temperature stability in a range from -50 to +350 degrees Celsius, and are exceedingly resistant to corrosion. By weight, Nivaflex consists of 45 percent cobalt, 21 percent nickel, 18 percent chrome, five percent iron, four percent tungsten, four per-



Throwing a Curve

*The how, what, when, where and
why of mainsprings*

BY GISBERT L. BRUNNER





The mainspring covers the entire movement in Ulysse Nardin's Freak.

cent molybdenum, one percent titanium and 0.2 percent beryllium; carbon accounts for less than 0.1 percent of this alloy's weight. Increasing the percentage of beryllium in an alloy further increases its strength and hardness, factors that are important for miniaturization.

For a mainspring to perform at its best, it not only should be made from an alloy like Nivaflex, it also should have a specially constructed end and bridle. The bridle holds the outer end of the mainspring against the inner wall of the barrel. As the mainspring gradually unwinds, the bridle coaxes it into the most nearly concentric shape around the barrel arbor. The barrel of a watch is the fuel tank of its movement. Without a barrel, no wheel in a watch's mechanism would turn.

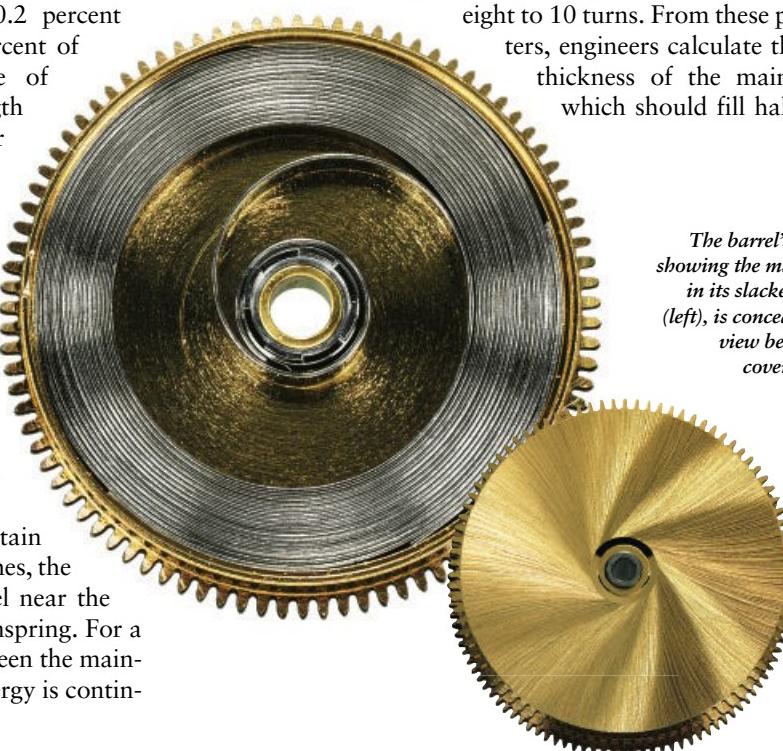
Friction between coils must be reduced to maintain a mainspring's performance. In hand-wound watches, the mainspring is attached to the inside of the barrel near the outer end (but not at the extreme end) of the mainspring. For a self-winding watch, a stationary connection between the mainspring and the barrel would not work because energy is contin-

ually flowing toward the mainspring while the watch is on its wearer's moving wrist. The connection used instead is the "slipping mainspring" or "slipping bridle" device that was patented by Jean-Adrien Philippe, of Patek Philippe, in 1863, before self-winding wristwatches appeared. (The device was designed to wind two mainspring barrels simultaneously.) In this configuration, the mainspring is attached to a circular expansion spring (the bridle), which presses against the inside wall of the barrel. The device prevents overwinding: with a little help from this precisely calculated sliding spring, the mainspring can first accumulate its maximum tension and then dispose of excess tension through the friction generated when the bridle glides along the inner wall of the barrel.

One of the advantages of the mainspring's coiled shape is a more nearly equal distribution of tension along the entire length of the spring, which goes hand in hand with relatively constant torque. A fully wound mainspring provides very strong driving torque, and a mainspring in its middle range between fully wound and totally exhausted delivers a relatively constant level of torque. The force declines significantly as the mainspring's tension lessens.

The barrel and the mainspring inside it play a fundamental role in the design of every movement. The center of a classically constructed caliber is occupied by the hour wheel and the cannon pinion, so the maximum diameter of the barrel is limited by the radius of the plate. The barrel's rotational speed defines the loss of torque during the first 24 hours after the mainspring has been fully wound. Afterward the mainspring in a hand-wound watch is usually given a complete tightening.

A small translation ratio to the center wheel's pinion and fast rotations of the barrel combine to minimize loss of torque. A typical mainspring should unwind after eight to 10 turns. From these parameters, engineers calculate the ideal thickness of the mainspring, which should fill half to 55



The barrel's interior, showing the mainspring in its slackened state (left), is concealed from view beneath the cover (below).



Panerai's Caliber P.2002 has three barrels for eight days of running time.

percent of the barrel. Torque arriving at the escape wheel should decline by no more than 15 percent the first day. The calculation of the entire gear train is oriented using these criteria so the watch's movement runs at a regular rate.

The frequency of the balance plays an essential role in all calculations. As the balance's frequency increases, the movement's running autonomy decreases. Skillful construction can achieve up to a week's running autonomy with only one barrel: the Swiss company Hebdomas proved this in 1913, when it introduced a watch with a big barrel that covered the entire movement. Ulysse Nardin used a similar construction in its Freak in 2001. The 1930s saw the advent of eight-day movements with standard barrels, modified gear trains and tiny balances paced at a frequency of 2.5 hertz. Today's four-hertz rapid oscillators can usually run for 72 hours without a fresh dose of energy. IWC's Calibers 51011, 51111 and 59210 demonstrate that a single barrel and a balance paced at 28,800 vph can achieve a full week of running autonomy.

Dividing the driving torque between two mainsprings is by no means a new idea. Henri Louis Jaquet-Droz employed this technique as early as 1785. Abraham-Louis Breguet also devoted considerable attention to optimizing the energy supply for his chronometers: two barrels acting simultaneously on one center pinion not only replaced the conventional chain-and-fusée system, they also enabled Breguet to reduce the mainspring's thickness by half. The Favre-Leuba company caused a small furor in the watch world when it debuted its three-mm-slim caliber family 25x and 27x in 1962: both movements were hand wound and, similar to Breguet's invention, each had two barrels acting on the center pinion. The thickness – or rather the thinness – of the springs was quite impressive: each was a mere 0.05 mm thick, yet produced 9 1/4 barrel rotations and approximately 40 hours of running autonomy. The advantages lie in reducing one-sided bearing pressure on the minutes wheel and in the fact that thinner mainsprings develop their force more uni-



A. Lange & Söhne uses an uncommonly long mainspring to achieve 31 days of running autonomy.

formly. On the other hand, the height increases with parallel switching of two barrels and their collaborative action on the center pinion.

Glashütte master watchmaker Alfred Helwig took a different approach. He relied on a pair of serially switched barrels that act one after the other. After the first mainspring has been fully wound, it then begins to tighten its counterpart. This arrangement doubles the overall length of the springs. Longines first used this principle in its caliber family 89x with two piggy-back barrels in 1975. The subsequent Caliber L990 was much slimmer, partly because its two barrels were positioned side by side. The advantages of two quickly rotating energy reservoirs are apparent: lower torque reduces the forces acting on the gear trains while simultaneously enhancing performance. The winding mechanism can work more efficiently in self-winding movements. Partly because of these advantages, this principle can be found increasingly in new constructions. Running time also increases when the length of one mainspring is added to that of its companion. Depending on the details of their construction, most of these calibers run for two to eight days. The pinnacle



The four barrels are visible on the back of TAG Heuer's Caliber V4 (above), used in the Monaco V4 (right).



The Quenttin from Jacob & Co. contains a record-breaking number of barrels: seven.



was reached by A. Lange & Söhne and its Caliber L.034.1 in the Lange 31, which can run for 31 days without a fresh dose of energy.

Panerai installed three serially arranged barrels in Calibers P.2002, P.2003 and P.2004, which resulted in a minimum of eight days of running autonomy. Blancpain followed suit in automatic Calibers 5235DF and 6938, each of which achieves 192 hours of running autonomy. Chopard packed a quartet of barrels into the L.U.C Quattro: four mainsprings, each 470 mm long, give Caliber L.U.C 1.98 a running time of at least 216 hours, or nine days. Vacheron Constantin's tourbillon Caliber 2253 runs for 14 days with one winding. TAG Heuer's linearly self-winding Caliber V4 has 52 hours of running autonomy.

Enrico Barbasini, Michel Navas and Mathias Buttet, founders of the now defunct Swiss movement maker BNB Concept SA, joined with Jacob & Co. to create its hand-wound Quenttin tourbillon with Caliber 5 that has a frequency of three hertz, seven barrels arranged side by side, and 31 days of running autonomy.

Far more important than increasing the number of barrels is the technical evolution of the energy reservoir per se. With an overall concept designed to maximize energy efficiency, Cartier's newest concept watch, the ID Two, achieves more than a month of running autonomy with four normal-sized, polymer-coated barrels made of fiberglass-reinforced material (see "Search for Tomorrow," October 2012 WatchTime). ○

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Ulysse Nardin's Carnival of Venice minute repeater; Gucci's latest timepiece inspired by the Grammy Awards; Hublot's trio of new Big Bang Ferrari watches; and a double-faced Grande Reverso from Jaeger-LeCoultre. Also, you can check out our slideshow of on-site photos from the SIHH watch fair and watch our exclusive video interview with Lamborghini CEO Stephen Winkelmann about his brand's partnership with Blancpain.

Enjoy!
Mark Bernardo
Digital Media Editor,
WatchTime

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Photo Slideshow
Inside SIHH 2013



Unlike its larger counterpart in Basel, the SIHH watch fair in Geneva is mostly closed to the public. To give *WatchTime* fans a glimpse of what goes on in those hallowed halls of horology, we've compiled a slideshow of photos, taken at the show by our own Mike Disher.

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Watches in Pop Culture
Gucci's New Grammy Timepiece



The 55th Annual Grammy Awards will take place this weekend in Los Angeles, and for the third year in a row in its partnership with the Recording Academy, Gucci Timepieces & Jewelry will release a new, Grammy-branded wristwatch to coincide with the music industry's biggest night.

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REVISITING THE '60s

BY ALEXANDER KRUPP
PHOTOS BY OK-PHOTOGRAPHY

Where can you find a Swiss watch priced under \$700 that has an automatic movement, a sapphire crystal and a sporty 1960s design? You can look to the Swatch Group, which owns the mid-range brands Balmain, Certina, ck watch, Hamilton, Mido and Tissot. These brands often reach back into their own histories, both near and distant, for design elements. This strategy has worked especially well for Tissot.

With the new PR 516, Tissot has revisited a design from 1968. The company has made some small changes to the original, making the hour and minutes hands a bit wider and shorter and adding the brand's "T" to the balancing end of the seconds hand. One detail has been left out of the modern version, however: the shortened minutes hand no longer runs under floating hour markers. Now the hand points to markers at the same level. The matching width of the markers and the hour and minutes hands is a new and attractive change.

The hands are easy to see in the daytime. The markers have narrow strips of black luminous material but glow much less strongly at night. Now, as on the original model, the dial is decorated with a fine sunburst finish. This finish cannot be seen as well on the black dial of our test model as it can on the model with the blue dial, which was the dial color of the original model.

Other details include a curved and angled crystal, a viewing window in the back with "spokes" suggesting those of a vintage car's steering wheel, and a perforated calfskin strap or stainless-steel bracelet. The spokes and strap link the PR 516 to the automotive world – in advertisements from 1968 the original model was pictured on a race car driver's gloved wrist.

In addition to an attractive design and low price, another great feature is the watch's average daily rate of just +1 second in the actual wearing test. However, this rate is obtained only when the wearer consistently places the watch in the "fast position" at night (with the crown pointing down). Timing machine results showed a slight deviation of one second and a maximum deviation of nine seconds. These results are achieved by a plain, undecorated ETA 2836 in the lowest of four quality levels (the "standard" version), with a date and a day display. In addition to the normal display, the wearer can set the watch to show a red numeral indicating the day ("1" for Monday, "2" for Tuesday, and so on) in the left side of the window. However, this version makes the display look crowded.

Setting the watch is no simple task. First, you must use your fingernail to pull out the narrow, tightly fitted crown, and second, it's

The Tissot PR 516 offers retro style from the '60s at an affordable price. How did it fare in our test?

never clear in which direction the crown should be turned to set the date and day. It's very easy to advance the wrong display.

The PR 516 lacks nonreflective coating on its crystal. The reflection under some lighting conditions can be strong enough to make reading the time impossible, despite the high contrast between the hands and dial. The minutes hand is a bit too short to ensure the precise reading of the time. The calfskin strap is simply finished and its folding clasp is standard. But at a price of \$695, these design flaws shouldn't keep a fan of vintage-style watches from enjoying a pleasant trip back in time. ○



You can set the watch to display red numerals to the left of the day names. The crystal is highly reflective from almost any angle.



Pros

- + Cool retro design
- + Very low price

Cons

- Highly reflective crystal
- Standard movement

SPECS

TISSOT PR 516

Manufacturer: Tissot SA, Chemin des Tourelles 17, CH-2400 Le Locle, Switzerland

Reference number:

T 071.430.16.051.00A

Functions: Hours, minutes, seconds; date, day; hacking mechanism

Movement: ETA 2836 "standard," automatic; 28,800 vph, 25 jewels, Etachoc shock absorber, Etachron regulator with eccentric, power reserve = 42 hours; diameter = 25.6 mm, height = 5 mm

Case: Stainless steel, curved and angled crystal without nonreflective coating, pressure-fit caseback with mineral crystal viewing window and "spokes"; water resistant to 100 meters

Strap and clasp: Perforated calfskin strap; double-folding clasp with safety buttons

Rate results:

(Deviations in seconds per 24 hours)

Dial up	-5
Dial down	-1
Crown up	-2
Crown down	+3
Crown left	-5
Crown right	+4
Greatest deviation	9
Average deviation	-1.0
Average amplitude:	
Flat positions	300°
Hanging positions	272°

Dimensions: Diameter = 40 mm, height = 13 mm, weight = 94 g

Variations: With silver or blue dial and perforated stainless-steel bracelet (\$750); gold PVD coating (\$850)

Price: \$695

SCORES

TISSOT PR 516

Strap and clasp (max. 10 points):	6
Operation (5):	3
Case (10):	7
Design (15):	14
Legibility (5):	3
Wearing comfort (10):	8
Movement (20):	9
Rate results (10):	7
Value (15):	13
TOTAL:	70 POINTS



The Pioneer Monoscope from Hanhart was designed to evoke the company's stopwatches of the 1930s.

Pros

- + Attractive, historically accurate design
- + In-house modifications

Cons

- Inconsistent quality in finishing
- Can be hard to read

Like Old Times

BY JULIA KNAUT

PHOTOS BY OK-PHOTOGRAPHY

Any fan of retro watches will fall for the Pioneer Monoscope. This monopusher design is clearly based on Hanhart stopwatches from the 1930s and reproduces the ridged bezel, red bezel marker and red pusher that distinguished those watches. Even the numeral font and shape of the hands are borrowed from those models.

Despite its overall appeal, the watch has a few faults. The satin finish on the stainless-steel case and the dial itself are neat (though simply executed); the sides of the hands, however, are unevenly coated. The glue on the varnished leather strap came loose at several places during our test and the strap itself wrinkled quickly. The clasp was the biggest disappointment, with clearly visible finishing flaws and a simple bent prong.

These faults were countered by the watch's ease of operation. The large, fluted crown is easy to pull and sits tightly, even in the extended position. Setting the time is simple, thanks to a hack mecha-

nism. The chrono pusher is a little stiff, so it's kind of hard to start, stop and reset the chronograph mechanism. The strap is a surprise: despite having a thickness of almost 4 mm, it is flexible and easy to thread through the buckle. One note: anyone using the rotating bezel to measure time intervals should be aware that it is fairly loose and might get knocked off position.

The low contrast between the cream-colored dial, white numerals and reflective hands can make the watch a little hard to read in some light. However, when that's not a problem, it's easy to see exactly where the hands are pointing because they're long and have curved tips. At night the green coating on the hands shows off its very strong luminosity, and even though the numerals glow less brightly, they can still be seen well enough.

The Pioneer Monoscope contains the standard Sellita caliber SW 500 with a La Joux-Perret module. Hanhart has modified this not uncommon movement combination so as to visually reflect its own Caliber 40, which debuted in 1938 and became an important movement for the brand. The chronograph is controlled with a single pusher located at the 2 o'clock position, and the two subdials are placed far to the outer edge of the dial. Decorations on the movement include various finishes and a black rotor.

The watch performed very well on our timing machine. It gained an average of four seconds per day, and the rates in all positions showed a maximum deviation of six seconds. The average amplitude in horizontal positions was 316 degrees, a little too high; the amplitude did improve, however, when the chronograph function was engaged.

SPECS

HANHART PIONEER MONOSCOPE

Manufacturer: Hanhart AG, Hauptstrasse 17, CH-8253 Diessendorf, Switzerland

Reference number: SRQ003J1

Functions: Hour, minutes, seconds; chronograph with 30-minute counter; hack mechanism

Movement: Sellita SW 500 with La Joux-Perret module, automatic; 28,800 vph, 31 jewels, Etachron regulator, Incabloc shock absorber, power reserve = 42 hours, diameter = 30 mm, height = 7.6 mm

Case: Stainless steel, bi-directional rotating bezel, curved sapphire crystal with double-sided nonreflective coating, fully threaded caseback; water resistant to 100 meters

Strap and clasp: Calfskin strap, stainless-steel pronged buckle

Rate test:

(Deviations in seconds per 24 hours, with chronograph switched off/on)

Dial up	+5 / +2
Dial down	+7 / +4
Crown up	+1 / +2
Crown down	+4 / +3
Crown left	+1 / 0
Crown right	+6 / +6
Greatest deviation of rate	6 / 6
Average deviation	+4 / +2.8

Average amplitude:

Flat positions	316° / 292°
Hanging positions	281° / 256°

Dimensions: Diameter = 45 mm, height = 16 mm, weight = 146

Variations: (\$7,900-\$8,800) Black dial, stainless-steel bracelet, smooth bezel

Price: \$8,100

SCORES

HANHART PIONEER MONOSCOPE

Strap and clasp (max. 10 points):	5
Operation (5):	5
Case (10):	7
Design (15):	13
Legibility (5):	4
Wearing comfort (10):	9
Movement (20):	14
Rate results (10):	8
Overall value (15):	11
TOTAL:	76 POINTS

The watch's price, \$8,100, is high in view of its finishing irregularities and plain buckle. Hanhart justifies the price by pointing to the fact that it contains a special version of the Sellita movement designed specifically to resemble a vintage Hanhart movement. Without a doubt the watch is unusual because of its attractive, historically accurate design, but it's an expensive pleasure. O

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Winston's Lost Watch

How a watch led to one of young Winston Churchill's finest hours

BY JAY DESHPANDE

It was the kind of accident that happens before you know it. The cadet ambled along beside a stream on a spring afternoon, then bent down on the bank to pick up a stick – and in an instant, the pocketwatch in his breast pocket had slipped out and plunked into the water.

He immediately disrobed and dove for it, but he could only manage to stay in the frigid water for 10 minutes, and no luck: he couldn't find the watch. Although most of the stream was shallow, the watch had fallen in a six-foot-deep pool – the only one for miles around.

Most people would probably leave it there, lamenting a moment of bad luck and going home. Or they would try to tell themselves that it didn't matter, and that the loss was no big deal. But this young man was Winston Churchill, and the watch – a Dent (see sidebar), with a half-hunter case and the Churchill family coat of arms engraved and enameled on the back – was not something he could just give up.

At the time, in April 1894, Churchill was 19 and in his first year as an infantry

cadet at Sandhurst, the Royal Military College southwest of London. His uniform had no place to keep his pocket-watch protected, and he could not attach a chain for it. Although he'd had a leather case especially made for his watch, it wasn't enough to shield the Dent against the elements.

Winston was determined to get the watch back because of what it meant to him. The gold Dent had been a gift from his father, Lord Randolph, before Winston went to Sandhurst.

As a boy, Winston Churchill wouldn't have appeared to anyone as a leader and a hero in the making. He showed little of the grit, courage, or authority he would later be known for. Instead, he was generally described as an unimpressive student, without much drive or ambition. He was demanding of his parents, irresponsible, and clumsy. Getting accepted to the military college had taken him three tries. But the loss of the Dent watch brought out another side of him.

Winston hired 23 members of his infantry detachment at a cost of three pounds and had them dig a separate





"I WOULD NOT BELIEVE YOU COULD BE SUCH A YOUNG STUPID."

LORD RANDOLPH CHURCHILL

course for the stream, routing all the water away from the pool. He then got his hands on the Royal Military College's fire engine and pumped the pool completely dry. There, at the bottom, he finally found his watch. The insides were rusted and the watch would have to be entirely taken apart. He sent the watch to the shop of M.F. Dent in London, hoping to have it repaired quickly and be done with it. The story of Winston almost literally moving heaven and earth to get the watch back became the stuff of legend: his peers at Sandhurst would retell it, and even decades later, friends would write to him recalling the event.

But the victory was short-lived. On April 21, he received an unexpected letter from his father. "I would not believe you could be such a young stupid," Lord Randolph wrote. Randolph had already been angry when Winston damaged the watch the month before: a cadet running by had batted it out of his hand, and it had needed a new balance staff, minutes wheel, pinion, seconds hand and crystal. The watch also had to be cleaned and its case needed repairing. Now, hearing of even worse damage to the timepiece, Randolph was furious.

Winston was alarmed: how could his father have learned about the mishap? As it happened, while Winston's watch was in Dent's shop on Cockspur Street, Lord Randolph had taken his own watch into the same shop for repairs. Things still might have gone off without a hitch, but the watchmaker, Edward John Dent, hadn't realized that Winston wanted to

keep his misadventure under wraps, and told all to the elder Churchill. Consequently, Lord Randolph took the opportunity to lecture Winston on his actions:

It is clear you are not to be trusted with a valuable watch & when I get it from Mr Dent I shall not give it back to you. You had better buy one of those cheap watches for £2 as those are the only ones which if you smash are not very costly to replace. Jack [Winston's younger brother] has had the watch I gave him longer than you have had yours; the only expenses I have paid on his watch was 10/- for cleaning before he went back to Harrow. But in all qualities of steadiness taking care of his things & never doing stupid things Jack is vastly your superior.

Lord Randolph's words were painful and surprising, but it was not the first time that he had lashed out at his son. Winston had immense admiration for Lord Randolph, whose career as a prominent Tory leader had culminated when he briefly became chancellor of the exchequer and leader of the House of Commons in 1886. But Randolph's political rise was over nearly before it began, and by 1890 he was mostly forgotten.

Churchill's relationship with his father was characterized by distance and unpredictability. He cherished the rare moments of warmth from Lord Randolph, and would think back longingly to "the three or four long intimate conversations with him which are all I can boast." It was unknown to Winston and his family at the time of the watch incident, but the beleaguered Lord Randolph was approaching the end of his life. Although historians dispute the cause of his death — tertiary syphilis and a brain tumor have

Lord Randolph's career as an important Tory politician deteriorated while Winston was still a boy.

often been suggested – Randolph began to deteriorate mentally by 1894, losing his faculties and his ability to speak clearly. His contemporary Lord Rosebery once referred to Randolph's humiliating end, still trying to behave like himself and making embarrassing efforts to speak in Parliament, as “dying by inches in public.” Most of this disintegration wasn’t noticeable to the Churchill family until it was far advanced; and it was certainly not apparent to Winston, who had so few chances to be around his father during his cadetship.

Lord Randolph’s mental duress had already led to several particularly cold-hearted criticisms of his son. A year before, when Winston had finally gained admission to Sandhurst, Randolph said little in congratulations, instead rebuking the boy for low marks that “demonstrated beyond refutation your slovenly happy-go-lucky harum scarum style of work for which you have always been distinguished at your different schools.”

With all the advantages you had, with all the abilities which you foolishly think yourself to possess & which some of your relations claim for you, with all the efforts that have been made to make your life easy & agreeable & your work nei-

ther oppressive nor distasteful, this is the grand result that you come up among the 2nd rate & 3rd rate class who are only good for commissions in a cavalry regiment. ... if you cannot prevent yourself from leading the idle useless unprofitable life, ... you will become a mere social wastrel, one of the hundreds of the public school failures, and you will degenerate into a shabby unhappy & futile existence.

Now with the Dent watch, Winston had once again infuriated his father through an unhappy accident. Lord Randolph was astounded at his son’s lack of responsibility. “The old Mr Dent was quite concerned at one of [the] best class of watches being treated in such a manner. ... I cannot understand anybody not taking the greatest care of a good watch,” he wrote to his wife, Lady Randolph. Then, he added: “I wanted you to know this as he may tell a vy different story.”

In this situation, as in others, Winston’s mother served as a buffer between her husband and her son. Randolph knew that his wife would be easier on Winston. Lady Randolph, née Jennie Jerome, was an American heiress and a

famous beauty, known to have a long line of paramours. As Winston grew up, she became a more and more consistent advocate for him, and at times a political mentor, too. In France at the time of the incident, she comforted Winston about the loss of the Dent.

Dearest Winston,

I am so sorry you have got into trouble over your watch – Papa wrote to me all about it. ... However he wrote very kindly about you so you must not be too unhappy. ... Oh! Winny what a harum scarum fellow you are! You really must give up being so childish. I am sending you £2 with my love. I shall scold you well when we meet.

*Yr loving
Mother*

Winston had gone to great lengths and showed great responsibility in getting the watch back, but he also showed real maturity in dealing with the aftermath of the debacle. Responding to his father, he seems to have taken his mother’s advice

The Royal
Military College at
Sandhurst as it was
in Churchill's time





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DENT WAS AMONG
THE MOST PRESTIGIOUS
NAMES IN ENGLISH
WATCHMAKING.

A monument to Churchill now stands opposite the Palace of Westminster, facing the clock first installed by Dent in 1859.

The Making of Dent

When Lord Randolph Churchill gave his son Winston a gold Dent watch (see main story), he was being generous indeed: Dent was one of the most prestigious names in England's celebrated watch history.

The founder of the Dent watch company was the watchmaker Edward John Dent (1790-1853), who apprenticed and then served under a number of British watchmakers before becoming a partner in the firm of Arnold & Dent in London in 1830. ("Arnold" was John Roger Arnold, son of the famous John Arnold.) In 1840, Dent struck out on his own and became respected as a maker of chronometers and clocks used in voyages of discovery. Dent watches were used during Charles Darwin's 1831 journey on the H.M.S. Beagle, and David Livingstone purchased a Dent chronometer for his voyage to the interior of Africa in 1850. The Dent firm was responsible for many patents and innovations. Thomas Prest, who worked for Arnold & Dent, made one of the world's first keyless-winding mechanisms. Dent became a standard of fine watchmaking for royalty, and the company made timepieces for

monarchs in Britain, Russia, Japan, Persia, and elsewhere. In 1852, Dent received the order to construct the great clock commonly known as Big Ben for London's Palace of Westminster. (Strictly speaking, the name "Big Ben" refers to the clock's hour bell, not the clock itself.) The clock was installed in 1859.

Following E.J. Dent's death in 1853, his company was split between his two stepsons, and for the next 67 years there were two separate Dent companies—E. Dent & Co. and M.F. Dent. Lord Randolph purchased the gold watch for Winston from M.F. Dent, located at 33-34 Cockspur St., London. (The "Mr. Dent" referred to in Winston's and Lord Randolph's letters is another Edward John Dent, 1854-1899, the fourth member of the family to carry this name.)

The Dent company continued to operate through the 20th century, no longer making timepieces but rather repairing its old ones. In 2008, the Dent brand came back on the scene and began producing wristwatches. Its legacy as an historic watchmaker lives on today.



Churchill's mother, Jennie Jerome, was an American heiress and a famous beauty.

**"I CANNOT
UNDERSTAND
ANYBODY NOT
TAKING THE
GREATEST CARE OF
A GOOD WATCH."**

LORD RANDOLPH CHURCHILL

to heart. His reply to Lord Randolph shows a young man developing formidable character, and making an effort to abandon his childish ways and take responsibility for himself in full:

I have been very unfortunate about the watch ... really I have had it for over a year without an accident and then come 2 in a fortnight. Yet I have been no less careful of it during that fortnight than during the preceding year.

Winston went on to describe the events in meticulous detail, admitting that he had been wrong and explaining where accidents had occurred outside of his control, as in the first case with the other boy. He acknowledged his own fault, saying, "this time I am more to blame," and he even explained all of his exertions with the pool and the infantry cadets in order to show his father how much trouble he had taken to find the watch. "I would rather you had not known about it," he writes at the end of the letter, "but since you know about it –

I feel I ought to tell you how it happened in order to show you that I really valued the watch and did my best to make sure of it."

I quite realise that I have failed to do so and I am very very sorry that it should have happened. But it is not the case with all my things. Everything else you have ever given me is in as good repair as when you gave it first.

Winston's measured, mature response must have comforted his father somewhat. In the end, he didn't have to buy a replacement: Lord Randolph resolved to purchase and send Winston a less valuable pocketwatch made by the Waterbury Watch Co. – "which is rather a come down," Winston admitted to his mother. Indeed, a Waterbury was a far cry from an English Dent watch. Waterbury was an American brand that mass-produced its watches; 75 years later its name would become "Timex."

Still, in a letter to his brother Jack, Winston made the best of the situation. "I have an excellent Waterbury watch which keeps far better time than the gold one," he wrote after the fact. Jack was six years younger than Winston, and had been eager to hear news about the scuffle that had everyone in the family up in arms. ("Why hav'ent I heared all these goings on before, how silly to have broken the watch!!!! Mama said Papa was furious ... Do write! and let me know how the watch happened.") Although Winston downplayed the incident to his brother, the whole affair must have plagued him for a long time. The Dent watch would later be given to Jack; Winston would never own it again. Jack wore it throughout his life and passed it on to his own son. (It was eventually stolen, and is no longer in the Churchill family.) The token of a father's respect had been taken away, and Winston could not get it back.

CHRISTIE'S IMAGES LTD. 2012



A Dent watch similar in appearance to Churchill's. This 1896 Dent was recently sold at auction by Christie's.



© CORBIS

Churchill in 1910,
when he was
Home Secretary

But Winston took comfort in knowing that he had handled the situation well. Reflecting on it frankly in a follow-up letter to his mother, he writes:

I feel quite clear in my own mind that I am not to blame except for having brought so good a watch back here – where there is everything in the way of its safety.

The loss and recovery of Winston's watch has the feeling of a turning point in the young man's life. Sandhurst had a significant effect on Churchill's character, his ambition, and his ability to apply himself. By the end of his time there, Winston graduated 20th out of 130 cadets, a marked improvement from his arrival.

However, Lord Randolph didn't live to see any of his son's successes. Even during their tensions over the watch, Randolph's mind was going; two weeks after the angry letter, his doctor advised him to give up public life altogether. He would die in January of 1895, just as Winston was graduating from Sandhurst.

Winston was dedicated to preserving and honoring his father's legacy; one of the first of his many books was a biography of Lord Randolph, aimed at repairing the reputation of the elder Churchill.

In the last years of Lord Randolph's life, Winston had hoped for some rapprochement. "Had he lived another four or five years, he could not have done without me. But there were no four or five years! Just as friendly relations were ripening into an Entente, and an alliance or at least a military agreement seemed to my mind not beyond the bounds of reasonable endeavor, he vanished for ever."

In the decades that followed, Churchill owned several other watches, the most famous of which is a gold Breguet no. 765 pocketwatch – a chronograph with a minute repeater and a fly-back seconds hand, purchased by his uncle the Duke of Marlborough. He owned at least one other Dent: company records show that in 1911 he bought a gold Dent pocketwatch, again with a hunter case. Churchill died on Jan. 24, 1965 – 70 years to the day after his father's death. ○

SPRING TIME

Technotime is one of the world's few hairspring makers. With the supply of hairsprings in imminent peril, WatchTime decided to pay the company a visit.

BY NORMA BUCHANAN

Betty Lallemand, in charge of hairspring finishing, checking the terminal curve on a hairspring at Technotime's factory in Les Brenets





aurent Alaimo is soft-spoken but he carries a big stick. Alaimo is the CEO of the Swiss movement supplier Technotime. His company is small, employing just 20 people, but it supplies, in addition to movements and modules, something that gives it heft out of all proportion to its size. Alaimo's big stick: hairsprings.

Ever since the Swatch Group announced in 2010 that it would seek clearance from COMCO (Switzerland's antimonopoly commission) to reduce sales of hairsprings made by its Nivarox subsidiary, the coming hairspring shortage has been the hottest, and most worrisome, topic in the Swiss watch industry. There are only about 15 hairspring makers in the world and most are quite small. The Swatch Group announcement yanked this elite group onto center stage; the watch industry is waiting to see what they do.

To find out what Technotime is doing, WatchTime went to the company's headquarters/factory in the town of Les Brenets in the Jura Mountains, right next to the French border.

TECHNOTIME IS NOT JUST very small; it's also very new. The company was founded in 2001, when Swiss investors acquired the assets of the bankrupt French movement manufacturer France Ébauches. The French company had made both mechanical and quartz movements. Its sister company, France Spiraux, also out of business, had made hairsprings, and that know-how became the seed for Technotime's developing its own hairspring operations.

At the time, there was no specific threat to the industry's hairspring supply.



Michaël Boulnois, manager of the hairspring department, with the machine that laser-welds the springs to the collets



Technotime CEO Laurent Alaimo

The Swatch Group in 2002 announced that it wanted to cut back on deliveries of ébauches, but made no mention of movement components. Technotime's owners nonetheless recognized the strategic benefits of being able to make their own hairsprings. Then, as now, hairsprings were available from just one major supplier, Nivarox. To be truly self-sufficient, and to have an assured supply of hairsprings, a company would have to make its own.

Technotime got help setting up its hairspring business from the former general manager of France Spiraux and from a teacher and hairspring expert from the University of Besançon. (Besançon had been the center of France's by-then nearly defunct watch industry.) "The owner saw that sooner or later [hairsprings would prove to be] a strategic component," Alaimo says.

That time has come. Companies have begun searching for new hairspring sources: in a couple of years, Alaimo believes, the movement makers will have used up their inventories of Nivarox hairsprings and will need to replace them. Technotime has seen an uptick in companies contacting it for information about its springs. "We've started to see month after month some customers coming to us. Which obviously answers the question of whether it was wise [to develop the capacity to make hairsprings]. We are just at the beginning of this market," he says.

Technotime has the capacity to make annually about 12,000 hairspring-balance wheel assemblies or 30,000

finished hairsprings alone. Alaimo knows that however much he's able to increase that capacity, he'll never be the biggest hairspring maker around. After all, his competition includes companies like the Richemont Group, whose ValFleurier movement-making subsidiary is developing hairspring-making capabilities, and the small but well-financed Atokalpa, which can dig into the deep pockets of its owner, the Sandoz Family Foundation, if it decides to make a bid to become a big player. But Technotime does have a leg up on other competitors, Alaimo says.

"Our mission is to be a supplier, but not especially a major one because we know we are competing with really big companies. We are reasonable. Yet we know our competitors very well and we know that we have some competitive advantages," says Alaimo. One is its now well-established expertise in the 20 or so notoriously delicate and complex operations required to make hairsprings. Some other companies are, or will be, starting from scratch.

Also helping Technotime is the fact that even its largest competitors will face the same formidable obstacle it does. At the end of the manufacturing process comes a series of labor-intensive, hand-finishing operations that severely limit how many hairsprings can be produced. These operations include fitting the hairspring to the balance wheel, welding the spring to the collet, creating the terminal curve, checking the balance's equilibrium, and pairing the right spring with the right balance. Alaimo calls these final steps the "bottleneck" because they slow the manufacturing process dramatically, turning a flood of coiled wires into a mere trickle of finished hairsprings. Even a company that has machinery to produce wire for hundreds of thousands of hairsprings per year could end up with just, say, 10,000, Alaimo says. Making more would require major investments in people and machinery. Even Nivarox must perform some operations by hand, he says. These manual processes stymie every hairspring producer in the world.

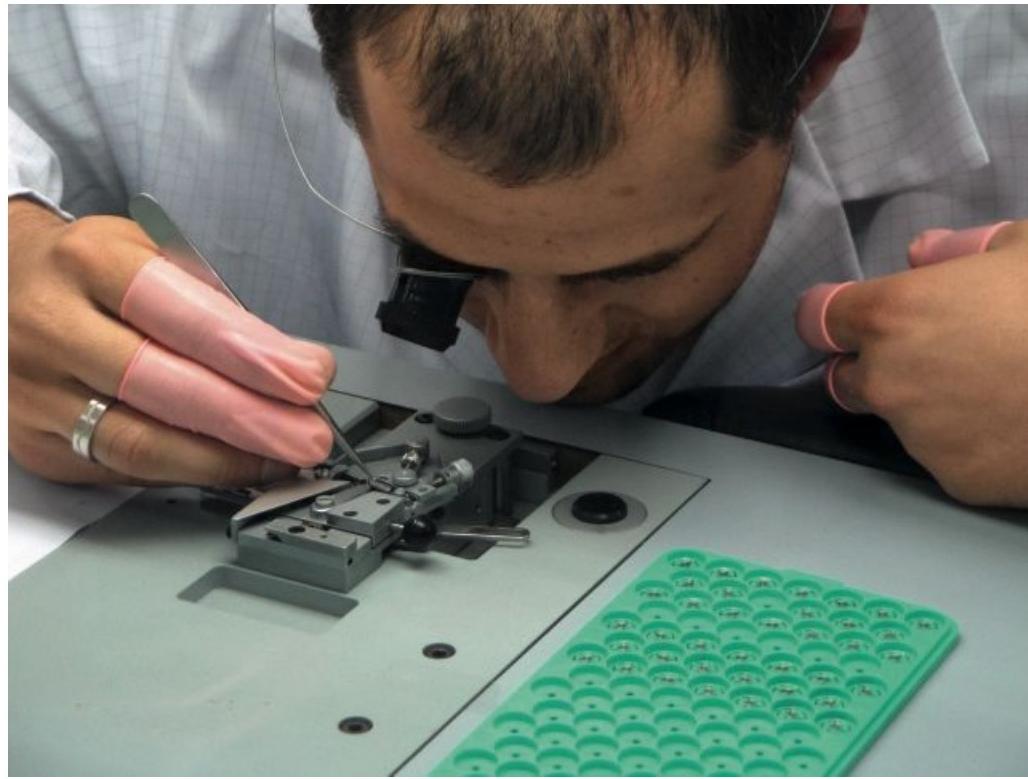
"I don't think that in the next two to five years we will see any significant improvement among the competitors



Machine for drawing the wire used to make hairsprings



A rolling machine, used to flatten round wire



*Assembling
the hairspring
and the
balance wheel*



*Sorting
hairsprings
into different
classifications
according to
the springs'
characteristics*

because we are all trapped with the same difficulties at the end of the process. If someone says, ‘I have a very good idea for automating the end of the process, and becoming a low-cost producer making large volumes,’ I say, ‘OK, guys. Just show me your hairsprings on the market.’ I think that we will wait a long time before seeing any very big production ... I think the market is pretty open for hairspring makers.” Because Technotime is small, Alaimo believes its best bet is in smaller-series, high-precision product rather than in high volume.

HAIRSPRINGS ARE NOT Technotime’s main business. The company is better known for its high-end movements and movement modules. Last year, it turned out about 11,000 of them. Technotime’s scores of movement and module customers include TAG Heuer, Peter Speake-Marin, Andersen Genève, Maurice Lacroix, Ebel, David Yurman, Graff, Louis Moinet, Cuervo y Sobrinos, and Frédérique Constant.

Its movement business is a world apart from its hairspring operations. While Technotime makes its hairsprings itself, start to finish (it gets the balance

wheels it pairs with them from outside), it does not make any of its movements or modules. Rather, it oversees and coordinates their production by a small army of subcontractors – 40 to 50 of them – who handle everything from product development to component manufacturing to most assembly operations to decoration (there are five or six subcontractors for decoration alone). While other companies are striving to become more vertically integrated, Technotime has gone the other way.

Until recently, the company made some movement components itself in a factory in Valdahon, France, that had belonged to France Ébauches. Technotime shut the factory in 2010, during the financial crisis. About the same time, it also closed its watch-assembly operations – its customers had been watch brands – because they were not part of its core business. (In 2007 it closed the quartz-movement business it had inherited from France Ébauches.)

Far from trying to hide its reliance on outside suppliers, Technotime is proud of it. First of all, Alaimo says, it improves the quality of its products because it allows the company to choose the best manufacturers to buy from. Maintaining high quality standards in all manufacturing processes is difficult for vertically integrated companies, Alaimo points out. Technotime credits its policy of using outside suppliers for the fact that since 2010 it has been receiving COSC certification for its movements (all of the movements it sells are fitted with its own hairsprings).

THE POLICY ALSO HELPS Technotime keep costs down, Alaimo says. “We see a lot of brands pushing for integration, but it’s building in a lot of high fixed costs.” He thinks these brands will discover they can’t make money being fully integrated. Then, he says, they’ll follow a path many brands have already chosen: making a portion of their movements in house, so they can benefit from the prestige that *manufacture* movements impart, while buying most of their movements from outside.

Technotime entered the mechanical-movement business in 2003, when it

introduced a mechanical module with big date and second time zone. The next year it came out with a collection of movements derived from a double-barrel, 120-hour-power-reserve base. These long-running movements, an automatic, the TT 738, and a manual-wind, the 718, are the company's trademark products. (It was also in 2004 that the large Chinese watch company, Chung Nam, bought a stake in Technotime. Its share has now grown to 80 percent. Despite being owned by a Chinese company, none of Technotime's suppliers is Chinese, the company's executives are quick to point out.) A chronograph movement is in the works.

Technotime sells two modules, which can both be used with the ETA 2892 and its clone, the Sellita SW300 (as well as with Technotime's own base movements). One is a big date with 24-hour display, the TT 651-24H; the other is a big date alone, the TT 651.

The company specializes in customizing movements for customers, who can buy them in very small batches. Technotime will skeletonize bridges to expose the movement or the barrels to show the mainsprings. Technotime will also alter the shape of the bridges, or give them and other components special finishes.

Technotime also makes tourbillon movements, between 50 and 100 per year, used by companies including David Yurman. Last year, the company placed third among seven tourbillon entries in the international chronometry contest in Le Locle (it was outdone by ultra-high-end tourbillon specialist Greubel Forsey and by Chopard). The tourbillons are priced for the budget-minded, at least compared to other tourbillons, between 10,000 and 19,000 Swiss francs each.

Not so its base movements: they start at around SF585 for the manual and SF685 for the automatic, as much as 10 times what ETA charges for its movements. One of Alaimo's goals is to bring his movement volume up and his prices down. "We need to have more affordable product for the entry level, so we need to have a product between SF250 and SF500," he says. ○



The TT 651 module with big date



Technotime's 791 tourbillon movement



A cased-up Caliber 791.50, with seconds hand on the tourbillon axle, placed third in last year's chronometry contest in Le Locle.

The Inside Story

Growing fascination with the inner workings of mechanical watches has sparked a boom in skeleton looks.

BY AISHWARYA SATI

I

In the 18th century, André-Charles Caron, a clockmaker to Louis XV, devised a new way of engaging discerning collectors in Paris. He introduced them to a “skeleton watch”: an openworked timepiece in which the wheels and gears were exposed, offering a look at the movement in all its glory. Over the years, watch brands like Cartier and Vacheron Constantin acquired this technique and made it an integral part of their collections, using it on everything from simple, slim watches to high complications. Here’s a peek into some of the latest skeleton watches.



Breguet Classique 5335 Grande Complication Tourbillon Messidor

One of the most significant inventions of Abraham-Louis Breguet, the tourbillon, was developed to improve the regularity of watch movements. The Classique Tourbillon Messidor is a tribute to this invention, which was patented in June 1801 ("Messidor" was the name for June in the French Revolutionary Calendar). The watch, which is hand wound, has Breguet's signature blue hands and comes in a rose-gold case with a 40-mm diameter. The movement, Caliber 558 SQ2, is entirely hand engraved. The watch has a power reserve of 50 hours and is water resistant to 30 meters.



Vacheron Constantin Patrimony Traditionnelle Openworked

The Traditionnelle line of the Vacheron Constantin Patrimony collection was introduced in 2007 and the skeleton models were added in 2009. The skeleton watches are available in two sizes – 38 mm and 30 mm – with two different movements, and each is offered in plain and diamond-set versions. The 38-mm watch has a white-gold case, housing the automatic Caliber 1120 SQ, which is just 2.45 mm thick. The jewelry version of this watch is studded with 82 round diamonds on the bezel. The 30-mm version houses the manual-wind 1003 SQ caliber; its jewelry version features 64 round diamonds on the bezel.



Jaeger-LeCoultre Grande Reverso Ultra Thin SQ 8

The Reverso, launched in 1931, has seen many variations over the years. The Grande Reverso Ultra Thin SQ showcased at SIHH 2012 has a highly decorated, skeletonized movement, the Jaeger-LeCoultre 849RSQ, which is hand wound and only 2.09 mm thick. The case is made of white gold and measures 7.2 mm. One can see the openworked and engraved movement through the dial and the caseback. The watch beats at a frequency of 21,600 vph. The white-gold dial is framed by a blue-tinted enamel coating, which matches the blue hands. There is also a disk with three "JL" logos at 1 o'clock that keeps track of the seconds. The watch was manufactured in a limited edition of 50 pieces.



Cartier Grand Complication Skeleton Pocketwatch

Unveiled at SIHH 2012, the Grand Complication Skeleton Pocketwatch, made of white gold, draws inspiration from Cartier's pocketwatches of the 1930s. It is 59.2 mm wide and has skeletonized Roman numerals. The watch is powered by the manual-wind Caliber 9436 MC, which is composed of 457 parts and has a power reserve of about eight days. It has a sapphire caseback and a gold dial and comes with an 18k-gold watch chain. The watch, which is water resistant to 30 meters, is available in a limited edition of 10 pieces in white gold and five pieces in white gold set with baguette-cut and brilliant-cut diamonds.



Piaget Altiplano Skeleton Ultra-Thin

Known for its ultra-thin watches, Piaget has set a new slimness record with its Altiplano Skeleton Ultra-Thin – two new records, in fact. The watch contains the world's thinnest self-winding skeleton movement, just 2.40 mm thick, and is itself the world's thinnest self-winding skeleton watch, 5.34 mm thick. It took three years of research for the brand to come up with the movement, Caliber 1200S. Housed in a 38-mm white-gold case, the movement has a platinum micro-rotor, a new balance bridge, and a new hour-wheel bridge that has been slimmed down to just 0.11 mm.

Carl F. Bucherer Patravi TravelTec FourX

This world timer is available with either a rose-gold or palladium case. The skeletonized dial allows a view of the decorated automatic movement, the RD 821. The small seconds subdial is located at the 3 o'clock position, while two chronograph subdials for measuring 12 hours and 30 minutes are at the 6 and 9 o'clock positions, respectively. The date is displayed through a red window between 4 and 5 o'clock.



Omega De Ville Hour Vision Skeleton

Equipped with co-axial Caliber 8403, this watch comes in a 41-mm platinum case whose sides, made of transparent sapphire, allow an unobstructed view of the self-winding movement. Equipped with a silicon balance spring, the watch has a sapphire dial with diamond-polished 18k-white-gold hour markers. It also has a time-zone function that allows the independent adjustment of the hour hand, ideal for travelers who wish to adjust the time without stopping the watch. The watch was made in a limited series of 88 pieces. It is water resistant to 100 meters.





Hublot Classic Fusion Skeleton Tourbillon

This watch is the brand's most skeletonized model to date. With a 120-hour power reserve and water resistance to 50 meters, this piece is available in two versions: titanium and King Gold, an 18k alloy developed by Hublot. The hands are similar to those on the very first Hublot watch. The self-winding tourbillon movement, designed and built by the brand, is visible through the openworked dial. Each version is limited to 50 pieces.

Montblanc Villeret Grand Régulateur Nautique

This watch, an homage to the harbormasters' clocks that ship captains once used as references for their marine chronometers, has a bevy of special features: a monopusher chronograph, a second-time-zone display and a day/night indicator. Its power-reserve display, on the lower half of the dial, shows not only how much power is left before the watch stops running, but, using a separate hand, the so-called "state of winding," i.e., whether the movement still has enough power to run with maximum precision. The watch has a regulator dial that is partly skeletonized to reveal the movement. It is sold as part of a two-piece set; the other piece is a large clock set on gimbals in the manner of a marine chronometer. Only eight sets have been manufactured.





Chopard L.U.C XP Skeleton

This automatic watch is equipped with the ultra-thin L.U.C 96.17-S, the first skeletonized movement ever made by Chopard. It beats at a frequency of 28,800 vph and has a 65-hour power reserve. The bridges are rhodium-plated and are openworked; the mechanism is visible through the dial and caseback. The L.U.C XP Skeleton comes in a 39.5-mm rose-gold case and has an alligator leather strap. It was manufactured in a 288-piece limited series and is water resistant to 30 meters.



Corum Ti-Bridge Power Reserve

The Corum Ti-Bridge Power Reserve in rose gold comes in a 42.5-mm case and is powered by the manual-wound Caliber CO 107. The hour and minutes hands and the power-reserve indicator are coated with luminous material. The 50-piece limited-edition watch, which has a power reserve of three days, comes with a crocodile leather strap.





Ulysse Nardin Maxi Skeleton

This limited-edition timepiece from Ulysse Nardin has a 43.5-mm case made of rose gold and is equipped with the UN-300 movement. Sapphire crystals on the front and back show off the movement's hand-engraved, skeletonized plate and bridges. The timepiece also has a brushed-finish plate bearing the Ulysse Nardin name riveted to the case edge at the 9 o'clock position. The watch is available with a black or brown crocodile leather strap with a rose-gold deployant buckle. It is limited to 80 pieces worldwide.

Bulgari Daniel Roth Carillon Tourbillon

This watch is equipped with the new in-house Caliber DR3300, which has 327 parts. The watch has a three-hammer minute repeater and a power reserve of 75 hours. The openworked dial in sapphire is cut out to reveal the repeating mechanism and the tourbillon. This model, made of rose gold, is available in a limited edition of 30 pieces and is water resistant to 30 meters. The watch comes with a brown alligator leather strap secured by a triple-blade folding clasp.



Rado Sintra Skeleton Automatic

This watch comes with a COSC-certified skeleton movement, especially customized for the brand. The case, 44 mm in diameter, is made of high-tech ceramic, which makes it light-weight and scratch proof. The gold-colored indices on the sapphire dial were applied in a manner that gives a 3D effect. The watch comes in a limited edition of 111 pieces.

Tissot Sculpture Line Skeleton

The dial of this watch has two cutouts that partially reveal its skeletonized movement, the manual-wind ETA 6497. Turn the watch over, and you get a full view of the 6497 through the transparent caseback. The watch comes with a brown crocodile leather strap and a butterfly clasp. It is water resistant to 30 meters.



Hermès Arceau Skeleton

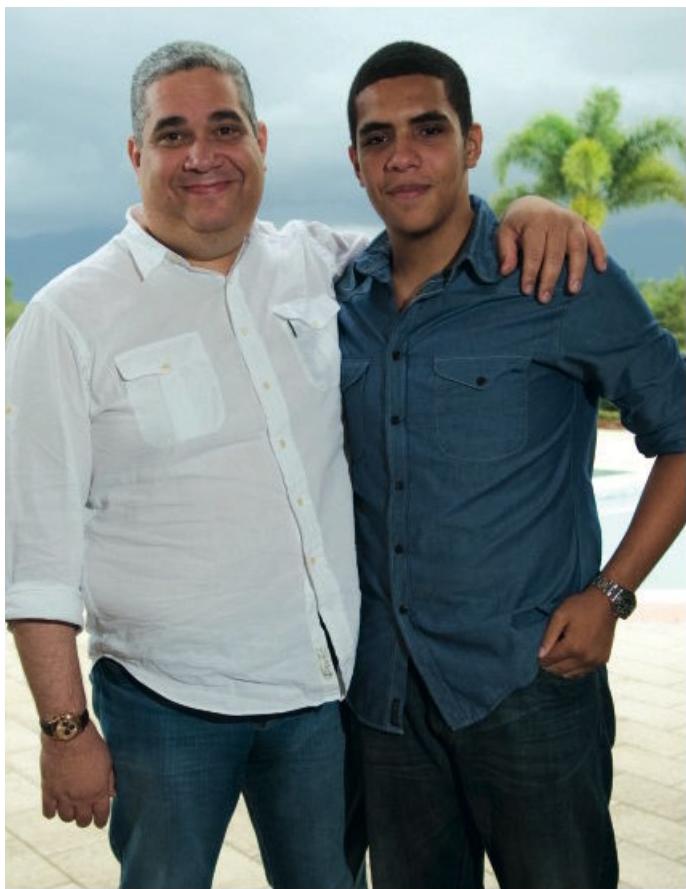
This watch comes in a 41-mm steel case and has a slate-gray dial with rose-gold hands, slanted numerals, and sweep seconds. It is powered by the Vaucher H1 automatic movement and is water resistant to 50 meters. The sapphire window on the dial allows a peek into the movement.



Scan here for downloadable wallpaper images of several of the skeleton timepieces shown here.
<http://www.watchtime.com/?p=27021>



FACEtime



Mitchell Musa and his son Nayib pose with their Rolexes in Puerto Plata, Dominican Republic. Mitchell wears a Rolex Daytona Rose Gold and Nayib a Rolex Milgauss.



Dr. Hersad Vaghela and Sonia Vaghela celebrate their 10th wedding anniversary on Hudhuran Fushi Island in the Maldives. He is wearing a Rolex Submariner Date and she an Omega Constellation.



Tommy Schulman sports his Zenith Captain Winsor while celebrating his 50th birthday on a Carnival Cruise.

Raffi Jebanian wears his Victorinox Swiss Army Officer's Watch at the GMT line in Greenwich, England.



During a father/son watch-shopping expedition, Benjamin Krut tries on a Hublot Oceanographic 4000 at the Hublot Boutique in Boca Raton, Florida.





Matthew Hall, holding daughter Maelynn Grace, wears an IWC Aquatimer, a birthday gift from his father, Thomas Hall, who sports his Ulysse Nardin Maxi Marine Diver.



Facetime Galleries

To submit a photo, please send your image to photo@watchtime.com with a short description identifying each person in the photo and the watch each one is wearing. Please give the first and last name of the wearer and the brand and model of the watch. If the photo was taken at an event, please specify when and where it was held. Only clear images in which both the face of the watch and the wearer are visible will be considered for publication. Images must be in JPEG format, no smaller than 1 MB. Only the best-quality and most interesting photos will be considered.



At John Schaaf's 60th birthday celebration, he wears an RGM 901 S and Lisa Crupi wears a Ulysse Nardin Lady Diver.



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Switzerland's Record Exports: Behind the Numbers

You've got to hand it to the Swiss watch gang. In a year when the hypervalued Swiss franc continued to slaughter most Swiss exports, when growth in watch exports to the formerly turbocharged Chinese economy plummeted to below one percent, when Europe teetered on the brink of breakup, the Swiss watch industry turned in another double-digit, record-setting performance. Swiss watch exports in 2012 rose by 10.9 percent over phenomenal 2011 results to 21.4 billion Swiss francs (\$23.3 billion). And the Swiss did it without the usual boost from the Asian hot spots.

The China slowdown that the Swiss watch crowd dreaded actually happened last year. "Hong Kong saw growth fall from more than 30 percent to 6.8 percent," said the Federation of the Swiss Watch Industry (FH), which released the data. "China recorded an even more spectacular slowdown, dropping from an increase of 50 percent to virtually zero growth at the end of 2012." For the year, exports to China were up just 0.6 percent. Exports to formerly red-hot Singapore fell two percent.

It's worth noting that the watch industry's performance is an exception in Switzerland. Other industries (textiles, metal, food, plastics, electrical engineering, machinery and equipment, and more) suffered last year, most from the overvalued franc, which gave international competitors an edge in pricing. A Credit Suisse report issued in January noted that other than watchmaking and the pharmaceutical/chemical industries, "Swiss industry had very few success stories to report."

So how did Swiss watch companies rack up another record? One factor was a surprising rebound in Old Europe. Despite year-long hand-wringing about their

bleak political and economic prospects, Europeans went luxury-watch shopping. Germany (+33 percent), the United Kingdom (+22 percent), Austria (+32 percent), the Netherlands (+33 percent), and Belgium (+35 percent) had banner years. Even the basket-case economies were surprises: Italy up 16 percent, Spain up 17 percent, Greece up 11 percent!

The Middle East was strong, too (the United Arab Emirates, +25 percent; Saudi Arabia, +15 percent; Qatar, +24 percent).

But Asia remains the key to Swiss watch success. The slowdown of the Hong Kong/China juggernaut made

last year. North and South America combined for 14 percent.

Which brings us to the United States. We're still Switzerland's second-best single market (see table). But we are a shadow of the power that we were before the Great Recession. In 2012, the FH noted, "the United States lost ground, ending the year with an increase close to the global average, +10.1 percent." Our market is on the mend, but slowly. In 2009, the market here collapsed: Swiss watch imports fell to 1999 levels. In 2010, they came back to 2003 levels; 2011 matched 2004. Last year's SF2.19 billion puts us where we were in 2005, still a long way from 2007's record SF2.44 billion. As one of Switzerland's Big Three markets, the U.S. remains a watch power, accounting for 10 percent of all Swiss watch exports. But the other two – Hong Kong and China – together account for nearly three times that (28 percent).

But with China sales flat in 2012, are the Swiss worried about their prospects for this year? Not much. Politics, not economics, is behind the China slowdown, Swiss sources say. It's a function of the changing of the guard in China. Once all the new functionaries are in place in the new government, the palm greasing euphemistically known as "gift-giving" will resume in full force, probably by mid-year. The smart money in Switzerland is predicting another record year for Swiss watch exports. "We expect the watch industry to continue along its growth trajectory in 2013," Credit Suisse says, "although it will post lower growth rates than in the last years due to the normalization of the pace of exports to China." Says the FH, "The year 2013 should see watch exports continue to rise." Look for single-digit growth this year instead of double digits. The Swiss will settle for that.

SWITZERLAND'S TOP 10 in '12
Value of watch exports in SF millions

COUNTRY	VALUE	+/-%
1. Hong Kong	4,371	+6.8
2. U.S.A.	2,187	+10.1
3. China	1,648	+0.6
4. France	1,317	+1.3
5. Germany	1,199	+33.1
6. Italy	1,174	+16.0
7. Singapore	1,125	-1.9
8. Japan	1,092	+19.7
9. U.A.E.	855	+25.2
10. U.K.	808	+22.4

Source: Federation of the Swiss Watch Industry

headlines. But other important Asian markets, like #8 Japan (+20 percent), #11 South Korea (+22 percent) and #12 Taiwan (+18 percent), stayed strong. Last year's surge in European sales did little to change the Swiss-watch balance of power. Asia dominates. In 2011, Asia accounted for 56 percent of all Swiss-watch-export sales. The figure was 55 percent in 2012. (The percentage is actually higher; the figure does not include purchases by Chinese tourists in Europe and America.) Europe accounted for 29 percent of export sales

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